SPORTS SUPPLEMENTS AND RISK: PERCEPTIONS OF YOUNG MALE SUPPLEMENT USERS

A Thesis
Presented to
The Faculty of Graduate Studies
Of
The University of Guelph

by
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In partial fulfillment of requirements
for the degree of
Master of Science
July, 2011

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The purpose of this study was to describe the experience of using sports supplements, from a risk theory perspective. Thematic analysis was used to conduct a secondary data analysis on 18 interviews done with young men who were interested in supplements. Participants were recruited from Guelph area commercial gyms and campus athletic centres. Participants used supplements because they worked out and wanted to gain muscle. Supplements, and especially protein, were part of a common knowledge among people who worked out. Participants evaluated whether supplements were ‘worth it’ by evaluating the cost, efficacy, and safety of supplements. Participants altered their behaviour in response to their perception of the riskiness of supplements, in order to feel safe. Many participants valued information from health professionals but found it lacking. Most information was available from sources that participants did not feel were credible.
ACKNOWLEDGEMENTS

To Judy, my advisor, I owe a debt of gratitude. Thank you for your guidance, your inspiration and encouragement. I continue to be inspired by your excellence, your kindness, and your commitment. Thank you for giving me this opportunity.

To Olga, my committee member, thank you for sharing your knowledge of qualitative methods. Your guidance and expertise have allowed me to step into a brave new world that has been a wonderfully rewarding experience.

To my family, thank you for your support and encouragement. From the early morning races to the bus station, to the computer I am writing on, this would not have happened without you.

And to Adam, my partner. Everything in my life is better because you are in it. Your support and encouragement keep me going when nothing else can. This thesis is another rewarding chapter in a life lived together.
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INTRODUCTION

Store shelves covered from floor to ceiling with bottles, pills, bars, tubs, all covered with pictures of hyper-muscular men, promise to put on muscle, improve strength, burn fat. Steroids are illegal, but for young men looking to put on muscle, there are a myriad of legal sports supplements to choose from. Occasionally, a news report of a young athlete dying on the field from supplement induced heart attacks is splashed across newspapers, but most of the time supplements exist quietly, under the radar of most people. Research on the topic is limited to survey research. Supplement use has been reported among professional, varsity, and high school athletes, and among commercial gym users. These supplements are being used by many people, but not enough is known about their safety. Until recently, nutrition supplements such as protein powder used to build muscle were regulated as food, and so were not subjected to high levels of scrutiny. Another important missing piece is the experience of the people who use the supplements. Detailed information about users’ perceptions of safety, and of practices around supplement use cannot be captured in survey research The purpose of this study is to explore the perceptions of young men who use sport supplements.

CHAPTER 1: LITERATURE REVIEW

1.1 Sport Supplements

1.1.1 Populations

Supplement use has been studied in several different populations. Investigations have been done into sport supplement use in elite athletes (Braun et al., 2009; Erdman, Fung, & Reimer, 2006; Huang, Johnson, & Pipe, 2006; Mazanov, Petroczi, Bingham, &
Holloway, 2008; Millman & Ross, 2003; Petroczi & Naughton, 2008; Slater, Tan, & Teh, 2003; Streigel, Simon, Wurster, Niess, & Ulruch, 2006; Sundgot-Borgen, Berglund, & Torstveit, 2003; Ziegler, Nelson, & Jonnalagadda, 2003; university athletes (Burns, Schiller, Merrick, & Wolf, 2004; Erdman et al., 2006; Herbold, Visconti, Frates, & Bandini, 2004; Kristiansen, Levy-Milne, Barr, & Flint, 2005); university students (Newberry, Beerman, Duncan, McGuire, & Hillers, 2001; Perkin, Wilson, Schuster, Rodriguez, & Allen-Chabot, 2002); commercial gym users (Goston & Correia, 2010; Morrison, Gizis, & Shorter, 2004); and adolescent athletes (Bartee et al., 2004; Eddy et al. 2001; Krowchuk et al., 1989; Massad, Shier, Koceja, & Ellis, 1995; Scofield & Unruh, 2006; Ziegler et al., 2003). The study samples were large, over 100 participants, with a few authors presenting results from over 1000 participants (Eddy et al., 2001; Goston & Correia, 2010; Sundgot-Borgen et al., 2003).

1.1.2 Gender

Many studies have found that supplement use differs by gender. Male athletes use more supplements than female athletes (Bartee et al., 2004; Goston & Correia, 2010; Kristiansen et al., 2005; Krowchuk et al., 1989; Massad et al., 1995; Scofield & Unruh, 2006; Sundgot-Borgen et al., 2003). Men also use different supplements than women. Massad and colleagues (1995) found that males use more anabolic supplements; and many studies reported men using more protein powder and creatine (Goston & Correia, 2010; Kristiansen et al., 2005; Slater et al., 2003; Sundgot-Borgen et al., 2003; Ziegler et al., 2003).

1.1.3 Reasons
The reasons reported for supplement use tend to centre around two areas: performance and health (Braun et al., 2009; Burns et al., 2004; Erdman et al., 2006; Goston & Correia, 2010; Herbold et al., 2004; Kristiansen et al., 2005; Massad et al., 1995; Morrison et al., 2004; Perkin et al., 2002; Striegel et al., 2006; Sundgot-Borgen et al., 2003; Ziegler et al., 2003). Men (Kristiansen et al., 2005; Perkin et al., 2002) and younger age groups (Goston & Correia, 2010; Morrison et al., 2004) are more likely to report muscle strength as a reason for supplement use. Protein and creatine in particular were associated with performance and muscle-related reasons for consumption (Braun et al., 2009; Burns et al., 2004; Erdman et al., 2006; Massad et al., 1995).

These results suggest that there are different patterns of supplement use, and different reasons for use among younger men, especially those focused on muscle gain and performance. Existing studies are limited, by the use of survey methods, from being able to explore the reasons for use more fully.

1.1.3 Information Sources

Results varied regarding the source of information about supplements. Some elite athletes were advised by their support team (Sundgot-Borgen et al., 2003), while others reported family, friends and coaches as the most important sources of supplement information (Braun et al., 2009; Erdman et al., 2006; Slater et al., 2003). One group of German athletes reported their physician as the most important information source (Striegel et al., 2006). Commercial gym users reported magazines and family and friends as their top two sources of supplement information (Morrison et al., 2004). Kristiansen and colleagues (2005) asked three open-ended questions about supplement knowledge in
their survey of varsity athletes. Forty-six percent of respondents said they did not know enough about supplements, and 16% were not sure if they knew enough. Thirty-seven percent would like to know more about certain supplements, and when asked what specifically they would like to know the most common response was that they wanted more information about all supplements.

1.1.4 Methods

All of the previous studies examined used survey methods (Bartee et al., 2004; Braun et al., 2009; Burns et al., 2004; Dunn et al., 2001; Erdman et al., 2006; Goston & Correia, 2010; Herbold et al., 2004; Huang et al., 2006; Kristiansen et al., 2005; Krowchuk et al., 1989; Massad et al., 1995; Maughan, Depiesse, & Geyer, 2007; Mazanov et al., 2008; Millman & Ross, 2003; Morrison et al., 2004; Newberry et al., 2001; Perkin et al., 2002; Petroczi & Naughton, 2008; Radimer, Subar, & Thompson, 2000; Scofield & Unruh, 2006; Slater et al., 2003; Striegel et al, 2006). Survey methods are excellent for reaching a large number of participants in a cost effective manner. They do not allow for researchers to ask in-depth questions, or allow participants to clarify their answers. In survey research, response rate is an important indicator of how representative the sample is of the larger population being studied, higher response rates ensure a more representative sample (Monette et al., 2008). For the two studies conducted in commercial gyms, researchers recruited participants to complete surveys until their required sample size was met; no indication of response rate was given (Goston & Correia, 2010; Morrison et al., 2004). Several surveys had good response rates (Braun et al., 2009; Newberry et al., 2001; Herbold et al., 2004; Kristiansen et al., 2005), between 54% and 72%. Huang and colleagues (2006) surveyed team doctors at the Atlanta and
Sydney Olympics, and so very high response rates could be expected, they achieved 95% and 97% response at Atlanta and Sydney, respectively. Sundgot-Borgon and colleagues (2003) also achieved very high response rates with elite athletes, 92% for females and 76% for males. Lower response rates with elite athletes were reported in two studies, 38% by Striegel and colleagues (2006) and 29% by Slater and colleagues (2003); Petroczi and colleagues (2008) analysed only 520 of the 2995 surveys they sent out, 0.2% response rate. The highest response rates with high school athletes were achieved by Krowchuk and colleagues (1989) who received completed questionnaires from 99% of athletes being assessed for the upcoming high school sporting year. Massad and colleagues (1995) achieved 98% response rate among high school students. A lower response rate, 23%, was reported by Scofield and colleagues when surveying adolescent athletes. Several studies did not report their response rates (Bartee et al., 2004; Dunn et al., 2001; Perkin et al., 2002; Ziegler et al., 2003).

Erdman and colleagues (2006), Kristiansen and colleagues (2005), and Slater and colleagues (2003) conducted the only studies that reported use of open-ended questions. Kristiansen and colleagues (2005) used mostly closed ended questions but included three open ended questions at the end of their survey to ask about negative effects of supplements, supplements they would like more information about, and what information they would like to know. Erdman and colleagues (2006) included an open question about what information would be useful about dietary supplements. Slater and colleagues (2003) asked how much participants spent on supplements. The use of Likert-type scales was reported in five studies (Bartee et al., 2004; Burns et al., 2004; Erdman et al., 2006; Massad et al., 1995; Newberry et al., 2001), other studies report using closed-ended
questions (Braun et al., 2009; Herbold et al., 2004; Krowchuk et al., 1989; Radimer et al., 2000; Scofield & Unruh, 2006; Slater et al., 2003; Sundgot-Borgon et al., 2003) or did not specifically indicate the nature of the questions included in their survey (Eddy et al., 2001; Goston & Correia, 2010; Krowchuk et al., 1989; Morrison et al., 2004; Perkin et al., 2002; Petroczi & Naughton, 2008; Striegel et al., 2006; Sundgot-Borgen et al., 2003; Ziegler et al., 2003). One study used information obtained during interviews with Olympic team doctors (Huang et al., 2006). No studies were found that used a qualitative approach to study the use of sport supplements. Quantitative methods are excellent for being able to quantify results and explore relationships between concepts. Existing research focuses on the prevalence of use among different groups, and offers some information as to the reasons for use. However it is limited by the nature of surveys. Participants can rate how strongly they agree or disagree with the reasons researchers present, but they cannot communicate their ideas in detail, or present different ideas not already present on the survey. Qualitative methods would allow more exploration into perceptions of the participants, by allowing for discussion with participants and analysis to explore meanings and constructions behind the reasons for use.

1.1.5 Summary

Sport supplements have been studied in a variety of populations: adolescents, university students, university athletes, elite athletes of various ages, and adults in commercial gyms. Men use more supplements, and more anabolic supplements than women, particularly protein and creatine. Supplements are used to enhance performance and to enhance health. Muscle strength is an important reason for men and younger users of supplements. Protein and creatine use are associated with performance and muscle-
related reasons for use. Family and friends are important sources of supplement information, and when asked, university athletes reported not knowing enough about supplements and wanting to know more. The methods used to study supplement use have been primarily quantitative.

The existing research does not offer the kind of information that could be obtained by using qualitative methods. Existing research provides valuable information as to who is using supplements, and gives us a hint as to some of the reasons for supplement use, and how they differ between different groups. However, it is lacking depth of understanding, and in particular a depth of understanding of supplement users’ perceptions and practices around risk and risk management. A deeper understanding of participants’ experiences would provide an idea of the variability of the experience of supplements, and provide insights into participants’ perceptions of the safety of using sports supplements, and any potential health risks associated with short-term or longer-term use of these products.

1.2 Risk

Sports supplements are a broad category. Steroids are illegal, but pro-hormones such as DHEA, are available, and non-hormonal supplements have been known to contain hormones not listed in the ingredients in some countries, including the US (Geyer et al., 2004). Both intentionally and unintentionally people may be ingesting anabolic ingredients in legal supplements. Legal sports supplements have also been withdrawn from sale because of safety concerns. An example is ephedra, which was marketed as a sports supplement and weight loss aid, and was subsequently found to be dangerous
Members of the medical community in the US and Canada have called for better regulation of ephedra (Sibbald, 2002) and sports supplements (Fontanarosa, 2003). There is therefore reason to be concerned that the use of these products may carry some risk, and that the perceptions of the people using the supplements regarding those risks would be helpful for health professionals to understand.

The study of risk is classified into the following four categories: assessment, management, perception, and communication. Assessment of risk is a process that is undertaken by professionals; it is the process of identifying and quantifying the risk of a technology, or potential event (Breakwell, 2007). Perception of risk refers to the views of non-professionals, and is examined at the individual and societal levels. Risk management is the “process of making decisions about risk and implementing them” (Breakwell, 2007, p. 14). This process can be undertaken by organizations, and by individuals. Risk communication is the process of information transfer from professionals to the public about risk and risk management.

The focus of this study is the perception of the risks of using over-the-counter (legal) sports supplements among a sample of young men with some knowledge of, or experience with, supplements. Previous research has shown that supplements are being used; however, the methods used in previous studies have not allowed for a rich description and understanding of the perceptions of supplement users.

There are many different theories and models of risk perception. These theories and models are used to understand and describe different aspects of risk perceptions and
to try to explain observed patterns of risk perception. Some theories focus on individual, and other theories emphasize social processes.

1.2.1 Social amplification theory

One of the social theories of risk perception is called social amplification theory (Kasperson, 1992). It is a representation of the social process that occurs to either heighten or attenuate the response of society to a risk event. Different groups often react differently to risk events, some will ‘over-react’ to an event and other groups may ‘downplay’ the event. The model includes many factors: media coverage, physical consequences, risk perception, public response, societal impacts, and attempts to explain the relationships between these factors (Kasperson, 1992). Both individuals and groups are included as ‘amplification stations’, points where the response to a risk event can be either heightened or attenuated. Individuals act both in their roles in various organizations, and in their role as individual citizens, and not always in the same way. An individual may be part of an attenuating response in an organizational role, and feel heightened response as an individual citizen. Secondary impacts of a risk event are created both by the event itself, and by the reaction to the event, the heightened or attenuated responses. These effects are not limited to the present, they include changes to public perception, political expectations, social order, social acceptance of technologies, and economic impacts.

1.2.2 Cultural theory

Cultural theory is another social theory of risk perception. It argues that while individual perceptions can be studied, it is important to consider the role that culture
plays in defining risk and influencing perception (Douglas & Wildavsky, 1982). Which risks a society considers important and unimportant are influenced by the culture of that society, and cultural theory suggests that the various risks selected as subjects of concern function to maintain the social structure. The structure of society is conceptualized by a matrix of grid and group, where different arrangements correspond to different types of social structures, for example low grid, low group corresponds to an individualist, competitive market system, whereas low grid high group corresponds to egalitarian groups. This classification of social structures becomes the context by which the response to hazards is understood; for example the risk posed by a food borne hazard may be perceived differently by groups that have different expectations of the roles of their institutions.

1.2.3 Risk Society

Another concept of risk in the field of sociology is that of the risk society. Ulrich Beck (1992) argues that the risk society is a state created by, and will naturally follow, the industrialized modern society. In the risk society, risk is pervasive; the environmental hazards created by industrial society are not able to be contained within certain groups; many of the risks are environmental and therefore pervasive, for example the air we all breathe or the water we all drink. In this way the risk society has an equalizing effect on class structure, no class can avoid breathing or drinking. But in another way, the class structure is reinforced by the ability to avoid risk, which is often dependent on wealth. In this way the risk status replaces the class status of the industrialized society.

1.2.4 Psychometric paradigm
On the individual level, the study of risk perception is often understood within the psychometric paradigm which is described by Slovic (2000. p. xxiii) as a “general approach and the theoretical framework in which it is embedded”. This approach to risk perception is grounded in the discipline of psychology, and is focused on quantitative measures of risk, benefits, and perception (Slovic, 2000). Work in the psychometric paradigm has described a set of qualitative characteristics of hazards, the magnitude of which have been shown to affect risk perception (Slovic, Fischhoff, & Lichtenstein, 1980). The qualitative factors that Slovic and colleagues (1980) found to be significant are dread of consequences, feeling of having personal control over the risk, familiarity, perception of equal sharing of risks and benefits, potential to blame a person or institution responsible for make the risky situation, and equity issues. The dread of the consequence has a large impact on the perception of risk. If the consequences of the event or technologies are dreaded by the individual, the risk is perceived as much greater than if the consequences are not dreaded. Similarly, the degree of control an individual feels they have over the risk affects the acceptability of a risk. Equal sharing of risks and benefits is also important—an event or technology that exposes one group of people to more of the risk and not more of the benefit is less desirable that one with an equitable distribution.

1.3 Risk and Sport Supplements

Risk is studied from various perspectives, in various disciplines. Where risk and health intersect, it is useful to know what populations of interest think and feel about an issue. Previous research has shown that supplements are used by athletes and active people of various age groups, and that young men have a particularly high rate of
supplement use (Kristiansen et al., 2005; Perkin et al., 2002). These studies have not considered the topic from a risk analysis perspective, and have not used methods compatible with producing a deeper understanding of the participants’ perspectives. The proposed study will be informed by risk analysis theory, and risk perception in particular, in examining perceptions of young male supplement users.

CHAPTER 2: STUDY DESIGN AND METHODS

2.1 Paradigm

This study was designed and undertaken from a social constructionist perspective (Berger & Luckmann, 1966; Gergen, 2009). Social constructionism is based on a relativist view of reality; reality is co-constructed through interaction. This perspective recognizes the role of the interaction between researcher and participant and researcher and text in the creation of meaning. Themes therefore do not exist to be discovered, but are created through interaction between participants and researcher, and between data and researcher during the process of data ‘collection’ and analysis. Given this perspective, it did not make sense to look for a second coder to validate the results, as the individual researcher is a necessary part of the knowledge creation process; by definition different researchers will construct different versions of results.

As a lens to guide the study of sports supplements, risk theory was used to focus the design of the project. Risk theory was used to formulate the research questions and inform the interview questions. The interview guide was designed to stimulate discussion of supplements in general and also ask questions to focus part of the discussion on risk. However, the examination of the data was not theory driven, but an inductive process.
Risk theory literature had been reviewed, and was part of the analytical process in that the awareness of it informed the analysis. The literature did not limit the analysis to identifying only ideas directly pertaining to risk, or only those already described in the literature. As a lens, risk theory served to guide and focus the analysis of the experience of supplements towards aspects that were viewed as integral to the experience of using supplements and related to the experience of risk.

2.2 Procedure

2.2.1 Secondary data analysis

This project was a secondary data analysis. The interviews and analysis were conducted by different people.

2.2.2 Data collection

Semi-structured, in-depth interviews were conducted by Master’s of Science student Jessica Wegner. Eighteen interviews were conducted with a convenience sample of young men who used and were interested in sport supplements. Jessica Wegner and the primary investigator, Judy Sheeshka, decided that theoretical saturation had been reached at 18 interviews. Theoretical saturation refers to the stage in the analysis where adding more data to the analysis no longer contributes new information to the “theoretical categories” (Charmaz, 2006). This definition is in reference to grounded theory, a more general definition from Guest, Bunce, and Johnson (2006, p. 65) who define saturation as “the point in data collection and analysis when new information produces little or no change to the codebook”.

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In-depth interviews are an appropriate method when using an inductive approach (Rice & Ezzy, 1999). Interviews are useful when the researcher desires to study the creation of meaning (Rice & Ezzy, 1999). Participants were recruited on the University of Guelph campus and at the Guelph commercial gym Goodlife Fitness by Jessica in the summer of 2005. The interviews were audiotape recorded and transcribed verbatim.

The interview guide consisted of seven questions. The questions were developed using risk analysis theory as the guiding framework. The questions were used as a guideline for the interviews, follow up questions and probes were used to clarify meaning and elicit further responses. Jessica asked the participants the questions designed to illicit responses about risk, and also followed participants in the direction they chose to take the interview.

The resulting transcripts were passed to me for analysis. The transcripts were scanned, edited and imported into MAXQDA.

2.3 Analysis

Thematic analysis is a commonly used method for analyzing qualitative data. It has been proposed that it is compatible with different ontological and epistemological stances (Braun & Clarke, 2006). Thematic analysis is particularly suitable as an approach to data analysis for this project. The goal of thematic analysis is to find patterns in the data and to report on them in descriptive detail. The analysis includes describing patterns, but also can include interpretation of the patterns (Braun & Clarke, 2006). This was appropriate for the purpose of this project; I wanted to create a rich understanding of the perceptions of these young men.
The analysis of this data was undertaken with an inductive approach. Risk theory guided and informed my research and interview questions, but when analyzing the data codes were created guided not by theory, but by content. Thematic analysis allows the adoption of an inductive or data-driven approach to the development of themes as opposed to a theory driven approach, where themes are developed based on previous research and then applied to the data. Although the domain of risk theory in general, and risk perception in particular, has been the lens through which to view the use of supplements, existing theory was not used to create a predetermined list of codes for use in classifying the data.

Thematic analysis is also an appropriate choice for secondary data analysis. As we approached this project from a social constructionist perspective (Berger & Luckmann, 1966; Gergen, 2009), the individuals involved in the research are co-creating the data and results, and the implications of the data collector and the data analyst being different individuals need to be considered. For thematic analysis the data can be collected and analyzed at different times; it is not bound, as is grounded theory, by a methodological requirement to conduct analysis simultaneously with data collection. So it was not a violation of the methodology to have data collection and analysis separated in time. As to the use of different individuals for data collection and data analysis, this can still be done with the view of a constructionist; the interaction between interviewer and participant created data, and the interaction of analyst and data created analysis and interpretation. The results would be different with the same person acting as both interviewer and analyst; in this study, each person made a unique contribution to the outcome.
2.3.1 Analytic steps

The procedure of thematic analysis involved following a series of steps.

The first step of the analysis was to familiarize myself with the data (Braun & Clarke, 2006). Transcription of the interviews would normally be part of this process, but in this study I read through the transcripts as the interviews had already been transcribed.

The next step was coding the data. The coding process for thematic analysis is similar to the process in grounded theory (Rice & Ezzy, 1999). The initial coding phase is open coding, where the data is looked at line by line and codes are created by “giving full and equal attention to each data item” (Braun & Clarke, 2006, p. 89, emphasis in original). The entire data set is coded using this open coding technique. Once open coding is completed, a more focused coding should take place. There are different opinions on how many levels of coding the analysis should include. Rice and Ezzy (1999) discuss three levels, open, axial, and selective, where open is the initial stage where all data is coded, axial involves a re-examination of the codes to see where there may be similarities and to refine the definition of each code, and selective coding as a more general process where the relationships among codes are considered. Braun and Clarke (2006) discuss only one level of coding, with re-coding occurring as the analysis continues. As new codes are added to the codebook, the existing data are re-analyzed to see if the new codes apply to any of the previous data. This process is to occur during the initial coding process, as well as any new insights gained while developing potential themes. This was the approach used in this study.
Once all of the data had been coded, the next stage of analysis was to start developing themes. This involved going through the codes and starting to group them into possible themes (Braun & Clarke, 2006). One way of exploring groupings and relationships between potential themes is to use a thematic map (Braun & Clarke, 2006). A thematic map is a pictoral representation, and can be revised as the themes develop. Some key issues at this stage of analysis are to determine what constitutes a theme, and whether themes will be semantic, latent, or both. A semantic theme is one that describes the data, a latent theme addresses "underlying ideas, assumptions, and conceptualizations—and ideologies—" p.84, emphasis in original (Braun & Clarke, 2006). In this project both types of themes were considered.

The next step was to review and refine the preliminary themes (Braun & Clarke, 2006). During this process themes were grouped together or split into sub themes (Braun & Clarke, 2006). Recoding of the data was done as required to add data to new or evolving themes and sub themes (Braun & Clarke, 2006).

The last stage was to define and name the themes. The definition of a theme that is fully developed should be able to explain both what the theme is and what it is not (Braun & Clarke, 2006). The result of this last stage of analysis should be a set of themes that both describes the data and answers the research questions.

2.3.2 Analytic procedure

Interviews were given to me in hard copy. I read through the interviews, making notes as I went. The paper documents were then transferred to electronic format using a text recognition program, then edited to ensure accuracy. The documents were then
imported into MAXQDA. Once in MAXQDA I started line by line open coding, and started a memo when ideas about codes or concepts, or ideas about or reactions to participants occurred to me. After open coding approximately two thirds of the interviews, I started reviewing open codes and grouping them into preliminary codes and themes. These codes guided the coding of the remainder of the interviews, and more open coding was also done in the remaining interviews. Once all of the interviews were coded I read through the grouped codes and open codes and started memoing my thoughts about them. For the grouped codes, I examined the retrieved segments, and used them to further develop codes and code groupings. Some segments were moved from one code to another, some open coded segments were added to established groupings. Retrieved segments helped to clarify and organized codes and subcodes. Further code refinement and grouping was conducted by examining retrieved segments and the coding journal. Relationships were explored pictorially. The resulting themes were further refined by reading retrieved segments, and memos.
CHAPTER 3: RESULTS

3.1 Sample

Eighteen men participated in the study. The age of participants ranged from 19 to ‘over 40’, the median age was 24.5, with three participants over the age of 30. Five participants were undergraduate students, three were master’s students, and the remaining ten participants were not students. Participant 14 had not used sport supplements because he felt he was not training at a high enough level to need them, he was also sceptical of supplements in general. Participants 12 and 18 were not currently using supplements but had briefly tried protein powder. All other participants were currently using sports supplements. The discussion of sport supplements included a wide range of products. Food, protein powders, creatine, natural health products— including those marketed for sport and those marketed for health— were all mentioned. During the interviews participants were asked what they considered to be sports supplements, so the variety of products mentioned was driven by the participants, not the interviewer.

3.2 Themes

Through the analytic process I created several interrelated themes. Figure one shows an overview of the themes and relationships.
Figure 1. Thematic Map
3.3 The Working Out Community

3.3.1 ‘Working Out’, Looking for ‘Results’

‘Working out’ is the term most participants used to describe lifting weights with the intention of gaining muscle. Gaining muscle is what many participants termed as ‘results’. They say this in different ways, ‘bulking up’, ‘getting big’, or ‘bigger’, and ‘gaining’ or ‘putting on weight’. So working out is an activity that is supposed to initiate change in the body, it is supposed to lead to ‘results’. Supplements are a way of maximizing those results. They are discussed as something that can help translate working out into results. Working out, though, is the requisite first step: “you get guys coming up to you like ‘what do you take?’ and ‘sure, well the first thing you have to actually work out’ (laughing), ‘then once you do that, then you can start worrying about everything else’” (Participant 13). Once you work out, you start to hear about supplements as a way of helping you get results: “ah just cause of lifting weights- there was always talk of creatine and your whey proteins to bulk up even more” (Participant 19).

3.3.2 Common Knowledge comes from working out

Participant 19 was not the only one who found “there was always talk”. Most participants reported that they had first heard of supplements just from being in the ‘working out’ environment. Participant 15 talks about when he first heard about supplements from friends “that’s when I started working out, when I was about 16 or so...”; participant 17 was also 16 years old when he first heard of sport supplements “just when I first started working out right away I heard about them”. Supplements are an
integral part of working out; if you spend time working out you will hear about them. They are something that is part of the culture. As participant 16 says, “it’s almost like if someone works out, they know what creatine is”. Participant 24 explains,

“that’s the kind of thing where, you know, being an active person, you know people who are taking supplements. They just- it’s just that kind of general knowledge I guess”.

This sense that some things were just known formed a specific kind of ‘common knowledge’. No particular source could be attributed to knowing what creatine was, or that protein was good for bulking up. It was just part of the experience of working out.

The supplements that are directly related to gaining muscle are protein and creatine. There were also a couple of participants who were runners, and were less interested in the ‘bulking up’ supplements. They don’t take creatine; they sometimes take protein, and use mostly energy bars and gels. Their experience is still similar to the participants who are looking for size, they hear about supplements from other runners, from race sponsorships and magazines. They are just different supplements and different magazines. In both cases, the initial knowledge of supplements comes from starting to be part of the community, the working out community or the running community.

3.3.3 Protein Paranoia, part of the common knowledge

Protein is the ultimate nutrient in working out. The paranoia about protein is about not getting enough. Many participants seemed to feel that it was always a struggle to get enough protein, and that they could never have too much. Protein intake was a goal rather than a limitation.
The culture of working out included knowing about supplements; supplements were part of the common knowledge of that group. Another very foundational part of this common knowledge is that if you want to build muscle you need protein, and lots of it. Most participants discussed the rule of 1g of protein per pound of body weight. Participant 15 can’t remember where he heard of the idea, but he knows that you need 1g protein per pound body weight: “Ah, just ah- I can’t even remember, I was always told-like it was just like the- a rule when you were- when you’re weight training that you want, you want ah- what is it for every pound you weigh, you want that- that- that- you want- so if I weight 225 lbs and I want to intake 225 grams of protein a day”. Participant 22 echoes his experience: “That’s kind of- I don’t want to say proven but, it’s kind of been established that um usually for either maintaining or putting on size, you want to do about a gram of protein per pound of body weight.” This rule is very ingrained; it was mentioned over and over again.

Being part of the ‘common knowledge’ generally added credibility to an idea. Even though no source could be attributed to the information, the fact that it was so pervasive and found in so many different sources gave an idea credibility, and in a way trumped the individual quality of any particular source. If, as participant 16 said, ‘everybody knows it’, then it doesn’t matter how credible each individual person is who said it, overall it is a credible piece of information. In the case of the 1 g per pound rule, this credibility definitely applies. The idea that it might be wrong is very hard for participants to consider. Participant 15 took an undergraduate nutrition course at the University of Guelph, where he encountered information that challenged his common knowledge about protein needs “I forget what the protein grams to body weight ratio was
that was presented in Nutrition 1010, but it wasn’t, you know, it wasn’t 1 to 1.”

(interviewer) “I think it might have been 0.8 grams per kilogram.” (participant) “yeah, something like that yeah, per kilogram,” “and then you gotta think ‘well, maybe that’s not for me, maybe that’s for someone like...’ like that could be- like there’s a difference between me and a 35 year old woman,”. Even though he knew that the course would likely present more credible information than other sources, he had a lot of difficulty reconciling the difference between the 1g per pound rule and what was presented to him in the course.

The sense of protein paranoia also extended beyond the 1 g per pound rule. There was a sense of urgency in the way many participants discussed their protein needs. Participant 10 says that “you can only get so far with just food”, that “you need this stuff [protein powder] to recover”. He really feels that he needs protein supplements

“I only take something because ah it’s required. Like, I eat- take the protein cause I need the protein, um... that’s yeah- that’s like really all I take, I guess”.

Participant 15 echoes this idea “I just take protein cause I know I have to take protein, like I know that I need it in my diet.” Also, it should be said that the protein requirements are specifically to feed the muscles. ‘Needing’ and ‘recovering’ are being discussed in the context of weight lifting. Also, as participant 16 discusses, there is the idea that the protein is directly ‘feeding’ the muscles, “whey is- what I use it for is fast delivery protein, like what your body can absorb the fastest and that’s when you want it the fastest, after a workout, so... basically when I get home from a workout I want to take
it in whatever protein is going to get to the muscle right away”. The overwhelming sense is that muscles need lots of protein, and getting it is a challenge.

This need for protein also relates to the discussion of whether protein powder is a food or not. Participant 15 finds protein supplements are necessary to meet his needs:

“I know how much protein that I have. And it’s just hard to get it from any other source- like it’s hard to get it from ah from food sources, in that amount”.

3.3.3.1 Cost is Paramount

Protein powder is cheaper than food. That was the bottom line for many of our participants. With the 1g per pound rule their protein needs were huge, and meeting those needs with food, usually meat, became prohibitively expensive; protein powder became ‘a staple’. Participant 17 says that it’s “kind of expensive to carry 8 or 10 chicken breasts per day though” and says that without supplements “the cost of food that I’d have to buy to supplement that would be outstanding”. For participant 20, “protein powder is um- I budget it right into my grocery list. Um, so I mean for me protein powder is a cheaper form of chicken breast”. The cost of protein, coupled with the large amounts they think they need, made it almost inevitable that they would need some kind of supplement.

3.3.3.2 The ‘Basics’

Supplements are not homogeneous, they belong to different groups. One of those groupings is ‘the basics’. This implies that these supplements are absolutely required, and not surprisingly, protein is the foundation of ‘the basics’. For some the basics also included creatine and vitamins, but protein was the starting point for supplementing.
When participant 22 is discussing what a sports supplement is, he says “probably the first thing would just be the basics, right? Everyone probably thinks of protein”. Participant 24 responds to the mention of whey protein with “yeah, I mean, that’s just kind of a staple”.

In a lot of ways, protein is on the borderline of the definition of supplement. It crosses the boundary between food and supplement; most participants saw it as a supplement, some saw it just as food in a different form. And while some participants chose not to use protein supplements, it was usually because they felt they could get the same thing from food. Participant 12 says “I just use like food to like- use as alternative instead of drinking protein, stuff like that”, and participant 18 felt “I don’t really need to spend the money on something that comes from a lab when I can get the real stuff”. For participants that chose not to supplement, they saw food as an equivalent choice for getting protein, and for many of those who did supplement, it was as a less expensive, more convenient way to get the same protein they could get in food.

3.4 Is It Worth It?

A lot of the discussion about supplements was rooted in this question, ‘is it worth it?’. Once participants started working out, they heard about supplements, and many of them felt that they wanted to use supplements to increase their muscle gains. There are three main ways that participants felt supplements could be worth it, in terms of cost, in terms of efficacy, and in terms of safety.

3.4.1 Cost.

Cost was a major consideration for participants. The cost of supplements often limited participants to take only certain things, the ones they considered the most
important. “I think if money wasn’t an object, I’d be doing a lot- a lot of- like more things” (Participant 16). Also, price was a reason not to look into something any further, “I was curious about that, too, but it just- um didn’t look into it because I’ve- first of all the price turned me off- it’s expensive, it’s about 80 bucks a month, so that turns me off it right there, and I didn’t look past it” (Participant 15). He is interested in things that are effective and safe, but if the price is too high, it’s not worth the trouble of looking into effectiveness and safety.

3.4.2 Efficacy.

Supplements are supposed to work. Participants want to recover faster, and get bigger. Once they start working out, they have entered a culture where using supplements is part of the ‘general knowledge’, and if they choose to use supplements, it’s because they expect them to work.

For participants who were currently taking supplements, they were not all confident that what they were taking was having the effects they had hoped for. There was definitely variability in how confident participants were in the efficacy of their supplements. Participant 16 talked about keeping a journal of how he felt when he was taking different supplements to help him decide what was effective and what was not. Participant 17 also monitored himself by tracking his weight, and percent body fat, “so I’ve been able to pinpoint, you know, for certain programs that I’ve put myself on, which supplements are providing the best type of results”. Participant 15 is confident that creatine helps him ‘bulk up’: “when I try to bulk up I use it. Cause then it- it does work, I don’t- a lot of people say it doesn’t work, but it does. There’s a noticeable difference.”.
Others were more sceptical, “the results were phenomenal though, in about like two weeks I gained 11 lbs. , but then I went off it and I lost it. All. Cause it’s all water weight, you’re just putting on water weight so it’s- creatine it’s so- argh fake. You know, it’s not- it’s not real.” (Participant 23).

Participant 24 is hesitant to use steroids, but he is looking for the next best thing that doesn’t involve needles. He “want[s] to be able to improve on [his] body building efforts”, so he is looking for “the next best thing”, hoping to get something effective without using needles.

3.4.3 Safety.

Most participants were not willing to accept future harm in exchange for gains in the present. Participant 23 is concerned about the future: “20 years old, you know, argh I want to get big but by the time I’m 30, if everything is screwed up in my body... long term effects were my biggest concern”. A supplement had to be affordable, and it had to work, but it also couldn’t be too dangerous. Participant 13 was adamant: “I wouldn’t take anything that’s unsafe”. But what is safe?

It was clear that when it came to safety, there were different categories of supplements. Some were safe, some were less safe. It was rare that the discussion of supplements did not involve some discussion of safety, for most participants they were taking supplements that they felt, for a variety of reasons, were safe enough. For some supplements it was because they were inherently safe, for others it was because they did things to increase the safety of the supplements.

3.4.3.1 Defining the level of risk.
By identifying a group of supplements with something with a known level of safety, participants could feel comfortable with labelling that group with a ‘risk status’. The best example of this occurred when participants equated supplements with food.

“the only supplement I can’t imagine overloading on would be a protein powder because it’s essentially just- it’s basically like eating ten Big Macs®, you’re just basically overloading the calories. Um, but I mean, the protein powder in itself I can’t see being harmful.” (Participant 20)

Both participants who used protein supplements, and those who did not, saw them as roughly equivalent to food. A protein supplement was “a more potent grade of protein” (Participant 23), different from food but an equivalent to eating ‘real food’. Some participants saw this as a cheaper, more convenient alternative to food, others chose to stick to food because “I don’t really need to spend the money on something that comes from a lab when I can get the real stuff” (Participant 18). Whichever route they took, protein supplements were seen as low or no risk because of their status as, or close to, food. Those who chose to use them expressed confidence that their status as food made them safe: “no fear of side effects just because it occurs in food” (Participant 15), and those who chose not to use them did not make the choice based on safety concerns, but on a preference for real food, perceived lower cost, or because real food was more ‘natural’.

Creatine was also marked as safe because it was a food, but there was more difference of opinion about creatine than about protein. Some participants felt creatine was okay because it occurred in food “I figure everyone should even be on creatine, as
creatine is natural” (Participant 20), but others felt creatine was getting out of the category of ‘equivalent to food, and therefore safe’: “creatine is a bit different because it’s less of a food” (Participant 15) “well creatine is not really a- a food is it? It’s something that’s in your body but ah, yeah but I would say maybe there’s a little bit of risk to that. Nobody really knows!” (Participant 26).

3.4.3.2 Crossing the line: from food to drug.

Some supplements were considered more risky, not because of what they were, but because of what they did. As we got away from food, the supplements entered into a grey area, somewhere between food and drug. This is a complicated middle ground, and hard to define.

One indication that supplements were viewed as closer to drug and further from food is that they were defined by their function. Protein was recognized as having a function, to build muscle, but that was not what made it safe or unsafe, what made it safe was its status as food or food-like. For other supplements, their intended function was what made them belong to a category that warranted more caution. Participant 20 “using a fat burner for long term periods of time, without cycling it, probably isn’t the smartest thing- I certainly wouldn’t do it (interviewer: why?) well, it’s playing with your central nervous system and your heart rate.” He is concerned about ‘fat burners’ (supplements that contain stimulants) because of what they do. Participant 11 discusses supplements that affect hormone levels as something that has a higher potential for problems: “there’s other supplements um such as testosterone - increases our natural source of testosterone and that. I can see problems with that if you overdid with those, um I’ve never tried them
myself though”. In both of these examples, the supplement is more dangerous because of its function, to increase hormone levels, and to affect the central nervous system and heart. Also, in both of these examples, the participants indicate how they deal with this increased risk: they modify their behaviour. Participant 20 will use fat burners but for short periods of time; participant 11 avoids supplements that affect hormone levels. Participant 25, a runner, discussed his feelings of doubt about a new supplement, based on what it was claiming to do:

Um there’s so much- I mean say like to, you know, keep track of what there is, check what’s in them, there’s just too much unknown. And like, I checked some of the bottles and, you know how on the soy protein and whey protein they list which proteins there is in them and um the ingredient lists aren’t really that long and convoluted but these- this E.A.S.- this new running performance system, I mean it’s like half a page of stuff I can’t even pronounce. And if you ask anyone who’s selling it- and all they’ll tell you is ‘oh, it increases your oxygen flow’, well how? I mean are we talkin’ extra red blood cells or we-vein dilation or, you know- this could be dangerous stuff- I mean, it’s thinning your blood.

He is concerned about what exactly the supplement is going to do in his body. The function it claims to have sounds more like what he would expect of a drug, and he is concerned that the precautions aren’t there to protect him. This put these supplements in a different risk category for many participants.

3.4.3.3 Keeping it legal.
Some of the participants felt that if a supplement was legal then it was safe. In a very general way this was a category of supplements to these participants: legal=safe, illegal=not safe. Participant 13 says that “anything that you can take is legal because it’s safe”. Participant 22 also expresses faith in Canadian regulations “as soon as there was kind of a problem, Canada banned it right away”. The interviewer informed participants that they could not tell her if they were using illegal supplements, but most participants spontaneously stated that they only used legal supplements. Participant 24 feels the risks are different between legal and illegal supplements: “but- and as I said, those are- those supplements are in a fine line between supplements that are a legal supplement and something that’s not legal, so of course there’s going to be more risks to your body if you’re taking them”. Illegal supplements were also the most effective supplements. Participant 19 talks about the pictures in magazines and how it is impossible to achieve that look ‘naturally’, as in without using steroids: “most of the people you see in magazines are on some kind of steroid or appetite suppressant that’s not natural, and that body image, in those magazines is virtually impossible- naturally.” To get the kind of ‘results’ you see in pictures, you need steroids; steroids will make muscles big, unlike any other supplement. This points to one of the relationships between efficacy and safety: for high efficacy, you must accept high risk.

3.4.3.4 Doing something to increase safety.

Some supplements are seen as safer than others, but while the degree of safety varies, participants felt that their supplement use was safe. Sometimes this was strictly because of what they did or didn’t take, but often it was because of how they took what they took. They were actively doing things to increase the safety of their supplement use.
3.4.3.4.1 Dose.

A common way for participants to increase safety was through dosage. When asked if he was worried about experiencing problems from his supplement use, participant 15 said no, “because I don’t think that I’m doing anything that’s too drastic”. Participant 17 discusses supplements with his doctor, and “a lot of the times, you know, he’s pretty happy with what I’m taking- because I’m not taking an excessive amount or anything like that”. The dosage is determining how they feel about the safety of their supplementing practices. Participant 21 discusses the risk of dose: “if you take something in excess- if you take excess supplement- excess protein even, there could be some side effects”. Participants were aware that some products were risky, but felt that if they could control the dose, they could control the risk, and that they felt safe enough to use the products. Being smart meant not taking huge doses:

Yeah, I find that usually when you hear of something ‘oh my god’ all of a sudden ‘this gives you a heart attack’, it’s not the guy that buys it, looks at the dosage and takes the dosage. It’s the idiot that thinks ‘if I do ten more then I’ll get ten times the effects’ and then ends up hurting themselves.” Participant 16

Participant 15 also felt “there’s a lot of people that will just push it”, and that “I don’t think ‘oh okay well it’s not working now, maybe I should double the dose’- like that’s just stupidity to me cause you never know what you’re doing to yourself”. Participant 24 says “What might be very safe and healthy at 10 milligrams per day is very dangerous at 25 milligrams per day. Lots of people are taking it at 25 milligrams per day and they’re going to live with those consequences. Personally, I’d like to find the line
between taking enough and taking too much”. The balance that participant 24 talks about
is the balance between efficacy and safety, he wants to increase the dose to promote
efficacy, but limit it to promote safety. There is a general awareness of the risk of excess
consumption of supplements leading to problems. The dosage is something participants
control, and by managing the dose they believe they are managing the risk.

3.4.3.4.2 Cycling.

Participants also manage risk by cycling supplements. This is especially important
for the riskier categories of supplements. When talking about fat burners, participant 20
says “it does play with your heart and it does play with your central nervous system, so
it’s something that um, I’m confident using but something that I wouldn’t stay on for
long period of time”. Cycling is also important for some supplements, not because of
safety, but because if their function. For participants who played sports, or competed in
weight lifting competitions, there were times when putting on muscle was important, and
times when it was not. For participants involved in sports, winter was when they put on
muscle, and when they would worry the most about getting a lot of calories and about
using creatine. For weight lifting competitions, participants had complex plans of gaining
periods, where they put on as much ‘size’ as possible, and dieting periods where they
strictly controlled their intake and activity to lose body fat and preserve muscle in order
to obtain the physical appearance they wanted for the competition. This meant that
especially for creatine, the supplement was only used for certain periods of time.

3.4.3.4.3 Controlling the mix.
Some participants felt that they were safer if they controlled the overall mix of things they were taking. Participant 10 was a heavy user of supplements; he felt that adding alcohol to the mix would be too much “well, because of the amount of pills and just like powders and stuff I take, my liver is already... working at overdrive, it just doesn’t have the power- like the capacity for processing alcohol”. Participant 24 is also concerned about adding alcohol: “there have been times when I’ve totally cut my alcohol consumption, to be honest, because I’m at that point very serious about training, and especially when I’m taking some of the supplements I take, everything you can do to spare your liver is a good thing. It’s all about minimizing risks.”

3.4.4.4 Knowledge.

Many participants wanted to research a supplement before they would take it. Having knowledge made them feel safe. Participant 17 says “I’m still doing a lot of research there because I want to make sure the-that there’s gonna be nothing harmful come of it”. He wants to know about the supplement so he can feel confident that he will be safe using it. However adequate knowledge could be difficult to come by. “Other than that, I think it’s just a lack of ah concise information I don’t know, but maybe it’s just cause supplements are still in their infancy, I don’t know” Participant 22. This summed up a sentiment that a lot of participants expressed, that good information was lacking. Participant 11 is talking about side effects and says “um creatine I’ve heard that it is very hard on your kidneys if you overdo it- like extremely overdo it. I’ve heard of people saying that, you know, you can take it normally and it won’t hurt your kidneys but... it’s all myths and rumours”. These feelings of uncertainty were common, despite having
information, participants were not sure they had a full understanding; they didn’t feel that they were getting the right information.

3.4.4 The Right Information.

Many participants struggled with information about supplements, but it was not a struggle to get information, it was a struggle to get the right information. There was a lot of information available, but participants were discriminating as to which sources they were wary of and which ones they would trust.

3.4.4.1 The ‘official’ sources are not helpful.

Doctors and pharmacists were considered credible sources by many of the participants. However, they were rarely a useful source of information. Participant 16 says that pharmacists “they don’t really know- they just know the health benefits- they don’t know what you want to know”. So while he is not questioning the credibility of the pharmacist, he is looking for the information about efficacy, will the supplement work, and how should he take it, what would make it safe or unsafe. And that information is not available to him when he asks a pharmacist. However, participant 17 did express that he felt more confident using a supplement because it was available at a pharmacy and “a pharmacist is pretty good about being honest”.

The question of discussing supplements with a doctor came up in some of the early interviews so the interviewer began raising the issue in subsequent interviews. She got an interesting diversity of responses. Two participants had parents who were doctors, and said they would ask them about supplements if they wanted information. Participant 21 expressed confidence in his cousin’s advice to stick to protein powder because he was
a doctor, and “if a doctor is suggesting, you might want to just do that”. Most participants were not satisfied with their interactions with doctors. “No, I find doctors don’t really know much,” (Participant 16) “when I meet with my doctor... ...I’ll mention what I’m taking, and I’ll mention the doses and sometimes he almost seems dumbfounded by it- maybe because he just doesn’t have time to go into it or look it up or check it or whatever” (Participant 17). Participants found that doctors did not have the knowledge about supplements that they would have liked. If they could discuss supplements at all, participants usually found that “most doctors are either ah past their prime in terms of being up to date on new supplements, and if it’s that basic, um it’s bad for ya” (Participant 22), they could not comment on efficacy, and very non-specifically on safety. Many of the participants would have liked to have had input from their doctors, as they found them to be a credible source for health information. Some participants, however, were totally uninterested once they found that their doctor was not informed about supplements. “I find most general practitioners or physicians are ignorant to the sport supplement industry and have very minimal knowledge um- that I would have no interest in consulting with” (Participant 20). Most participants, however, did feel that the medical profession would have something to offer, if they could get access to someone with specialized knowledge, like a sports medicine doctor. However, none of the participants had access to that kind of service.

3.4.4.2 Ads are not credible.

Most participants were wary of advertising. Participant 22 works in a supplement store, and says “the only down side is a lot of the information we get is very, very biased. Um, because we get information from like the specific company or the distributor”.

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Participants know that companies who sell supplements have a vested interest in them using their products. There is a wealth of information available from supplement companies, both online and in magazines. Participants cited this as a reason that these sources were less credible, “every one of those fitness magazines you see are owned by supplement companies, so those magazines are vehicles to pump the products” (Participant 20).

“It’s just raw ads within those magazines so of course they’re gonna tell you, you know ’check this program- look at this picture of this guy who is really muscle-ly because he takes this product and he’s also paid a lot of money to-you know, do that and um, you know, it’s cool to I guess to broaden your horizon about- trust those magazines in the sense of just the um- the fact that the product exists” (Participant 23).

“A lot of magazines are owned or partially owned or funded by supplement companies... ...a lot of the reading material that’s out there, is very suspect because it’s generated by the supplement companies.” (Participant 24).

For the most part, participants are aware of advertising and the impact it has on the quality of information. Participant 16 discusses one of his favourite resources, a book by Arnold Schwarzenegger that is like a body building encyclopaedia, “he’s not selling products, he’s just writing down the contents of the product... ...he’s saying okay, this is creatine, this is what it does, I’m not saying that Joe Blow’s creatine is better than this one but as long as it says this in the ingredients, this is what its gonna do”. He feels the
information is better quality because the book is not selling one brand over another, it is giving information about the function of the ingredients.

3.4.4.3 Labels and packaging.

An extension of participants’ feelings about advertising was their feelings about product labels and packages. Participants had a variety of opinions about the dosage on the label, and the ingredients list. Participants 17 and 18 did not trust the dosage on the label: “Well, you know, they’re trying to sell you stuff so... who’s to say that they’re not adding a couple more tablespoons each day just to get you to go through it faster” (Participant 18) “the labels on them, I’m sceptical about that. I think they’re misleading, they’re all they’re selling a product, the faster they can sell, the better it is for them- the more money they’re gonna make” (Participant 17). When talking about dosage, Participant 13 says

ah, it’s not that it’s trustworthy but it’s all information I used before. Again, it’s a product being sold to so many people over such a broad spectrum of body types and weights and sizes like, you know, somebody who’s a 350 pound like NFL lineman is gonna take a lot more of something than I would, and I would take more than like a 120 pound female who’s a tri-athlete or something like that, right?... ...I’ll read the label and say like ‘ok, well there’s like 20 grams of protein per scoop so I will take’- if I want this many grams of protein, this is what I’ll take... ...but I do I trust the amounts and stuff because I- it’s somewhat monitored or- ah regulated, I guess (slight laugh)
He feels somewhat similar to participants 17 and 18, he doesn’t feel that the label dose is necessarily appropriate, but not necessarily for the same reasons. Participants 17 and 18 were suspicious that the desire to sell more product made label doses higher, participant 13 thought they were not necessarily appropriate for him, but he trusted that the product contained that amount of protein stated on the label.

**3.4.4.4 Personal experience**

With the credible sources not having the information they wanted, and being wary of information from advertisements and supplement companies, participants often turned to each other. Talking with other people using the same supplements was a way of reassuring themselves that their supplement use was appropriate and would be safe and effective.

**3.4.4.4.1 Trust**

Participants who were ‘into working out’ felt that they were part of a group. People who worked out had similar goals, and similar interests. Participant 22 discussed this sense of group, and the trust shared within the group:

Well, usually how it works is ah- plus we’re in the small town of Guelph but ah, usually in every gym there’s a small- kind of like ah cliques right? And you have your more serious people, you have your senior citizens that only come in the morning for cardio, and then I guess, my group- the more serious athletes or body builders. Um, it's just a big trust thing because you all have the same common goals. You know, someone may want to get a lot bigger, someone may want to get smaller but in the scheme of things, everyone is kinda on the same page.
At the gym or on a sports team, people were part of an identifiable group, and would share information “guys are like ‘oh yeah, I’m thinking about, you know, taking protein’, okay and I say ‘this is when I take it, like this is how much I usually take’, um... but ah, yeah like you- most of it I got ah from my own experience and like other guys on the team like ‘oh yeah I’m taking it this many times a day’” (Participant 13). This is another facet of the culture described when discussing the sense of common knowledge about supplements. Participants had a sense that they could trust other people who were part of that culture. Many of the participants felt that this was their best source of information. For some, they arrived at it after searching out more credible, ‘official’ sources; for others, it was their starting point and best source. Participant 11 wants to “read some pretty good reviews from- from average body builders too” before deciding to try a new supplement, and when discussing this family doctor whom he feels does not know anything about supplements, he says “I would feel more comfortable talking to a body builder about it”. He is starting from within the ‘working out’ community as his point of reference for what is good information. Similarly, participant 20 is confident that people who actually use supplements are the best source of information

I would look to somebody who’s in the real world- actually using the supplements and been using them for years before I would look through a science journal because ah, most professional body builders who use these products- professional athletes who use these products who um don’t have a science background, obviously know- obviously they’re doin’ something right. So obviously they know something that we don’t know and most of the time, these guys figure this stuff out before the documents figure it out anyways. So I mean I would go to
people in the real world who are actually using them- who have used them, tested them out and have had experience with them themselves, who have had experience with them with other clients- so personal trainers, fitness professionals, fitness experts- and I would go to um mainly fitness authorities in the industry who are reputable and um, know what they’re talking about.

His starting point for information is clearly from within the fitness world, he trusts those who have experience with supplements, and are part of that culture.

Participant 17 had a lot of trouble feeling that he had found the right information, he would look at different sources that did not agree with each other and not know what to make of it. When asked about what his best source of information was, he said “the people that I really have found that I can trust right now are my colleagues who have a lot more experience than I have”, referring to other personal trainers. In the absence of clear, credible information he is relying on trust. He also talks about the past, before he was a personal trainer, and how he felt he received good information from other people at the gym, better than the information from people who were selling the products: “they were pretty helpful, obviously they would tell me about taking certain things was different from the guys that are selling it- cause most of the guys selling it would tell me to take more, but I would get some pretty honest information”. He is more willing to trust his colleagues, trainers and fellow weight lifters. He thinks their information is more honest than what he was hearing from people selling the products.

3.4.4.4.2 Websites, forums and magazines
Internet forums were talked about quite a bit as a way of seeing what other people were doing. They were the virtual equivalent to talking to their peers at the gym. Participant 11 talks about how he decides what dose to take “there’s directions on the side but I’ve also gone on- on the internet and searched around and seen what other people- how they take it, and um the different phases of taking it, and um just what other people - how other people feel about it”. The internet allowed participants to see what other people outside their own gym or team were doing with supplements. Similarly to talking to people in their real lives, participants particularly valued that they could see what people were doing “who are actually using the products” (Participant 20) through this virtual medium.

Participant 13 likes the information in *Men’s Health* magazine about athletes and what they would eat in a day, “and then it would be like, you know, protein shake here, protein shake here, protein shake here or like here, chicken or fish- um yeah, so that’s the other thing, you can kinda- it doesn’t say like- it’s not like directions like ‘take this much at this time’ but, you kind of see what other people are eating and ah...”. He takes that information and adds it to what he will use to decide what he wants to do with his own supplements. Most of the participants expressed that they trusted *Men’s Health*. It was in a separate category from other supplement magazines, it was not mentioned in the same discussion about magazines that are owned by supplement companies and therefore not credible.

**3.4.4.5 World View**
World view functions as a modifier, to intensify the search for the right information. There is diversity among the participants as to where they start out in their search for information. Some start from the health/science perspective, looking for research studies, health professionals’ opinions, etc. Some start from within the fitness world, from what weight lifters know and compare to that. Instead of a dichotomy, it is more of a spectrum, with participants falling at different points along a line from purely science to purely fitness. I think of this as their world view.

From the health/science world view, most participants are looking for information from credible sources. They are looking for the ‘right’ information about supplements. As we have seen in the section on information, the ‘right’ information on supplements is hard to come by, and searching for it leads to a sense of conflict. World view, then, acts to intensify or diminish the sense of conflict participants feel when searching for information. The further their world view is to the science end of the spectrum, the more intense the conflict is when they are searching for information, and not finding what they are looking for.
CHAPTER 4: DISCUSSION

This study is unique in sport supplement research. Using a qualitative approach produces a different kind of understanding of the experience of using supplements, and perceptions and practices that pertain to risk. This makes a significant contribution to the story of sport supplement use.

Participants are looking for information, in many different places, and in many cases they do not find what they are looking for. This echoes the results from Kristiansen and colleagues (2005), who asked three open-ended questions about supplement knowledge in their survey of varsity athletes. The most common response to what specifically they would like to know was to have more information about all supplements, and 46% or respondents said they did not know enough about supplements. Their finding that participants wanted more information is echoed by our results here. Most of the participants wanted information, and it was not just a matter of getting information, it was about getting the right information. They are inundated with information from supplement companies through ads and sales people, but what they want is the right information from the right sources. Those right sources, doctors, pharmacists, researchers, are either hard to come by, in the case of researchers or sports medicine specialists, or they don’t know the kind of things that participants want to know about these products. So while we are hearing a similar message as Kristiansen and colleagues heard from their participants, we know that for our participants the appetite for knowledge does not exist because of a lack of information. It is in the face of large amounts of information and an awareness, for the most part, of what sources are likely to be accurate and reliable. They have an appetite for the right information, something that
they have not found despite seeking it out. Many of the participants would benefit if their family doctors had the resources available to lay out for them the evidence about the supplements they are asking about, the benefits, the side effects, recommendations about whether they are safe or should be avoided. Many of the supplements discussed by our participants are included under the Natural Health Products designation and so doctors may have better access to this information that they did in 2005 when our data was collected. There are also those participants for whom the right information came from the fitness world. They would likely not be as interested in finding useful information from health professionals.

Morrison and colleagues (2004) found that for commercial gym users, magazines and family and friends were the best sources of information about supplements. Here we have an idea of how those sources are experienced by participants. Many magazines are owned by supplement companies and so are considered to be selling products, and therefore suspect. *Men’s Health* magazine was seen as much more credible, and was an important resource for these participants. Friends can refer to the trust described among peers, at the gym and on the sports team, as the best source of information, the people who are most likely to be honest.

There are certainly some results that echo parts of Slovic’s (1980) psychometric paradigm. Dread of the consequences and feeling of personal control over the risk, and the potential to blame a person or institution for the risky situation were all found to be qualitative characteristics of a risk event that affect the perception of relative riskiness of that event. In this study participants felt supplements that functioned like drugs were more dangerous. In many cases this is due to dread of the consequences. The risk of
damaging an essential system like the circulation, the nervous system, an organ like the heart, these were the unspoken but implied consequences of using stimulant supplements. They were treated as a separate category that warranted special consideration, and different behaviours when taking them: limiting the time and dose. Hormone supplements, whether legal or illegal, were also talked about with consideration of the consequences for ‘messing up your hormones’, or having detrimental effects on ‘future plans for a family’. Both of these types of supplements were considered to have consequences that were far worse than a protein supplement, which was mostly perceived as being a food or close to food. The discussions of dosage and cycling of supplements are both ways that foster a feeling of personal control over their supplement use. Participants talked of feeling safe because they stuck to a lower dose, obeyed the maximum dose listed on the package, or being confident using what they perceived as riskier supplements because they would only use them for a short period of time. They had a high degree of control over how they used these supplements, which many of them cited as a reason for not fearing side effects or future problems. Lastly, the potential to blame a person or institution for the risky situation affected risk perception. Those who expressed faith in the regulations show some aspects of this characteristic. They are confident that the government regulations are keeping them safe, and so they will have an entity to blame if that promise of safety turns out to be untrue.

Researchers are becoming aware of body image issues in men as a growing trend (Barlett, Vowels, & Saucier, 2008). While this study was more focused on risk, there are some results that are relevant to body image concerns. The underpinning of the supplement story is the desire to put on muscle. Participants work out to gain muscle, and
supplements are supposed to help them achieve that goal. This desire points to the pressure to conform to the thin, muscular ideal that has become the societal expectation for men (Barlett et al., 2008) and women (Markula, 1995). This data was collected in 2005, and recent research has shown that body image issues for men have been increasing. While it seems to be of some concern to participants in this study, it is reasonable to expect that it would be more of a concern if this study was to be replicated today. Further study on this topic with a view to body image concerns would likely yield interesting results. It would likely be a larger issue for participants than was seen in this study, because of trends in societal expectations, and if the focus of the study was more explicitly geared to addressing body image concerns.

4.1 Strengths and Limitations

This study looks at sport supplements from a different perspective than currently exists in the literature. This is perhaps its greatest strength, that it presents a rich description of the experience of supplements, in a way not possible using survey methods. The results are potentially useful to professionals.

Because of the nature of the study, and the use of convenience sampling, the results are context bound, they cannot be generalized to a broader population. The approach used in this study is intended to provide a deep description of these particular men and their experience.
CHAPTER 5: CONCLUSIONS, IMPLICATIONS, AND FUTURE RECOMMENDATIONS

The understanding produced through this study is unique in sports supplement research. The use of semi-structured interviews and thematic analysis has allowed the analysis to construct an understanding of young men’s experiences of using supplements. The participants in this study expressed a wide variety of experiences and attitudes towards supplements.

Supplements are part of what I have called the working out community. This sense of a community, though there were varying degrees to which participants felt part of it, was recognized as a source of information. Most participants knew about supplements because it was just common knowledge among those who also worked out. This sense of common knowledge was a powerful source, for most participants it was credible and trusted. As an alternative to the internal ‘common knowledge’, many participants also wanted confirmation of information from credible sources outside of the working out community, such as health professionals, but did not find their input helpful. They could not find what they felt was the ‘right information’, something that was both credible and useful. The degree to which participants located themselves as being within the working out community affected how concerned they were about finding the right information.

Participants wanted supplements to be affordable, to be effective, and to be safe. Finding the right information was part of feeling confident that supplements were both effective and safe. Participants assessed the riskiness of supplements by tying them to
other things with known risk statuses, like food, drugs, or illegal supplements. They also modified their behaviour when using what they felt were more risky supplements in order to feel safer.

5.1 Implications for health professionals

This study describes a complex way of perceiving the risk of sports supplements. Participants take an active role in increasing their feelings of safety, and they want information. Some are resistant to input from doctors and other health professionals, but others would be very receptive if doctors could offer more information. However information must be interpreted as the right information to be useful to participants.

5.2 Implications for men working out today

These interviews were done in 2005, and substantial changes have happened to the internet between 2005 and now. Expansion of internet resources, social media, blogging and forums likely have implications for access to information and sharing in the ‘workout community’. The process of getting information may be more complex than was seen in 2005.

Also since 2005 the social pressure on men to confirm to an ideal body has increased (Barlett, Vowels, & Saucier, 2008). The desire for results may be intensified by the increasing social pressures for men to be lean and muscular. This also may change the dynamics of the decision about whether supplements are worth it, by putting even more emphasis on obtaining results.

5.3 Future research
Future research may add to the story by focusing on participants who are more similar than was done in this study. Focusing just on varsity players who are motivated to get results so they can improve their performance in sport, or only on weight lifters who compete in body building competitions, or only on commercial gym users who are motivated by looks might allow the supplement experience to be described in more detail. Motivations, perceptions of what the right information is, and the balance of what makes it ‘worth it’ may differ between groups.
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APPENDIX A – INTERVIEW GUIDE

Interview Questions:

1. When did you first hear of sports supplements?
   
   (prompts: do you remember how old you were? who mentioned them to you, or where you read about them?)

2. What do you consider to be a sports supplement?
   
   (prompts: what kinds of things come to mind when you hear the term ‘sports supplements’? in your opinion, would something like skim milk powder be a sports supplement if it was used as an alternative to whey protein?)

3. What sports supplements are you currently using?
   - What led you to look into that/those particular products? (prompts: Did someone suggest that you use these? who?)
   - How long have you been using these?
   - Have you used other products in the past? which ones? What made you decide to discontinue using them?

4. Where do you get information about your supplements – for example, how much to take?
   - What’s the best source of information for you?
   - What sources of information would you be skeptical of?
5. Have you heard or read anything about potential side-effects or problems of using these products?
   - Does it depend upon how much a person takes?
   - Are some people more likely to have problems than others? Who?

6. Do you think these products may cause side-effects or problems for you, either now or in the future?

7. Are there sports supplements that you are interested in, but for whatever reason, have not tried?
   - (If yes) Can you give me some examples?
   - Could you elaborate on why you have not tried them?

In conclusion, may I ask if you are a (high school student/university student)?
   - If a university student: What university? What year are you in? What program?

And finally, may I ask how old you are?
APPENDIX B – CONSENT FORM

CONSENT TO PARTICIPATE IN RESEARCH

Sport Nutrition Supplement use among Young Men

You are asked to participate in a research study conducted by Dr. Judy Sheeshka, June Matthews and Jessica Wegener of the Department of Family Relations and Applied Nutrition, at the University of Guelph.

If you have any questions about this study, please feel free to contact Dr. Judy Sheeshka at (519) 824-4120, ext. 54479 or jsheeshk@uoguelph.ca, or Jessica Wegener at (519) 824-4120, ext. 54479 or jwegener@uoguelph.ca.

PURPOSE OF THE STUDY

Studies have shown that a variety of over-the-counter supplements, including creatine, conjugated linoleic acid and amino acid supplements, are popular among young men wanting to improve their sports performance. We would like a better understanding of what users expect to gain, or have already gained, by using these supplements, and what they believe to be the potential risks, if any. Please be assured that we are not interested in the use of any illegal products.

PROCEDURES

If you volunteer to participate in this study, we would ask you to do the following things:

- Participate in a confidential one-on-one interview
- Sign and date this consent form, after you’ve completed the interview
- If you are between the ages of 16 and 19 years, we will also ask you to get your parent(s) or guardian(s) to sign a consent form
  The interview will take place at a location that is convenient for you and the interviewer (e.g., a juice bar). It will last approximately 45 minutes, and will be tape-recorded.
POTENTIAL RISKS AND DISCOMFORTS

Some participants may feel uncertain when responding to some of the questions. You will be reassured that there are no right or wrong answers, and that all information will be kept completely confidential.

POTENTIAL BENEFITS TO PARTICIPANTS AND/OR TO SOCIETY

You won’t benefit directly from this research, but to thank you for your time and trouble, you will have the choice of a $10 gift certificate to Zehrs, Canadian Tire, or Chapters.

This study is the first one, to our knowledge, to use interviews to talk with supplement users and explore their perceptions of the benefits of using over-the-counter supplements, their concerns about any side-effects, how they weigh the pros-and-cons of using these products, and what information they would like to have, if any, about the products. Ultimately, this will help us to identify any information gaps so that users can be fully informed when they choose sports supplements.

PAYMENT FOR PARTICIPATION

Participants in this study won’t receive any direct financial benefits. However, in appreciation of your time, we will offer you a choice of a $10 gift certificate to Zehrs, Canadian Tire or Chapters. If you decide part-way through the interview that you don’t want to continue, or if you decide after the interview is completed that you don’t want to be in the study, you will still receive your gift certificate.

CONFIDENTIALITY

Every effort will be made to ensure the confidentiality of any identifying information that is obtained in connection with this study.

Each audio-recorded interview will start off with an opening statement of the date, time and a participant number (used in place of your name). If your name comes up at any time during
the interview, it will be later transcribed as your participant number. There will be no way of identifying you from the transcribed interview.

After the audiotape has been transcribed, the tape will be erased or destroyed. All the transcribed documents will be kept in a locked filing cabinet, and only the three researchers will have access to them. After two years, all the documents from this study will be shredded.

**PARTICIPATION AND WITHDRAWAL**

You can choose whether to be in this study or not. If you volunteer to be in this study, you may withdraw at any time without consequences of any kind. You may ask to have your interview or parts of it, removed from the study data. You may also refuse to answer any questions you don’t feel comfortable answering, and still remain in the study. If you decide after the interview is finished that you don’t want us to include your interview in the study, you can contact Jessica Wegener and ask her to destroy your interview tape or transcript. The investigator may withdraw you from this research if circumstances arise that warrant doing so.

**RIGHTS OF RESEARCH PARTICIPANTS**

You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights or remedies because of your participation in this research study. This study has been reviewed and received ethics clearance through the University of Guelph Research Ethics Board. If you have questions regarding your rights as a research participant, contact:

Research Ethics Consultant                 Telephone: (519) 824-4120, ext. 56606

University of Guelph                      E-mail: sauld@uoguelph.ca

437 University Centre                     Fax: (519) 821-5236

Guelph, ON  N1G 2W1
I have read the information provided for the study “Sports nutrition supplement use among young men” as described herein. My questions have been answered to my satisfaction, and I agree to participate in this study. I have been given a copy of this form.

Name of Participant (please print)

Signature of Participant       Date

SIGNATURE OF WITNESS
Name of Witness (please print)

______________________________________   _________ ______
Signature of Witness      Date

If you are interested in receiving the final results of this study, please check accordingly:

Yes     No

If Yes, please provide an email address or mailing address so that we can send you a copy of the final results.