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A Preliminary Investigation of the Prevalence and Perceptions of Vegetarianism among College Athletes

by

Justin Arias

A thesis

Submitted in partial fulfillment

Of the requirements for the degree of

Master of Physical Education in the Department of Sport Science and Physical Education

Idaho State University

Fall 2014

Committee Approval

To the Graduate Faculty:

The members of the committee appointed to examine the thesis of Justin Michael Arias find it satisfactory and recommend that it be accepted.

_____

Name,
Major Advisor
Dr. Karen Appleby

_____

Name,
Committee Member
Dr. Caroline Faure

_____

Name,
Graduate Faculty Representative
Dr. Mary Nies

Idaho State
UNIVERSITY

Office for Research Integrity
921 South 8th Avenue, Stop 8046 • Pocatello, Idaho 83209-8046

April 2, 2014

Justin Arias
Stop 8059

RE: Your application dated 4/2/2014 regarding study number 4072: The Prevalence and Perceptions of Vegetarianism among College Athletes

Dear Mr. Arias:

I agree that this study qualifies as exempt from review under the following guideline: 2. Anonymous surveys or interviews. This letter is your approval, please, keep this document in a safe place.

Notify the HSC of any adverse events. Serious, unexpected adverse events must be reported in writing within 10 business days.

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Sincerely,

Ralph Baergen, PhD, MPH, CIP
Human Subjects Chair

Table of Contents

Abstract

The purpose of this study was two-fold: (1) to investigate the prevalence of vegetarianism among college athletes at a public university in the northwest region of the United States, and (2) to investigate the perceptions of vegetarianism athletes hold at this institution. Although studies on vegetarianism in the general population have grown in recent years, there have not been an abundance of studies done on vegetarian collegiate athletes. With the growing acceptance of vegetarianism, this study aimed to answer questions about vegetarianism among collegiate athletes to analyze the differences and/or similarities among vegetarian athletes and vegetarians in the general population. In this study, I utilized a mixed methods approach. I surveyed vegetarian and non-vegetarian student athletes at the university about their dietary habits and perceptions. I used electronic surveys, hard copy surveys, and face to face interviews to collect data from the student athletes. The results of the study indicated that a large majority of athletes at this institution have a negative stigma towards vegetarianism. In addition, there was an overall lack of knowledge from all participants involved.

Chapter I

Introduction

Problem Statement

According to Ruby (2012), vegetarians account for 3% of the population in the United States. Research has shown health benefits associated with a vegetarian diet (Frasier, 2009). However, social stereotypes may impact those who choose to follow a vegetarian diet. In the 12th Century, the Roman Catholic Church declared vegetarians to be heretics and were persecuted (Kellman, 2000). Recently, the perceptions of vegetarianism have shifted from negative to positive (Ruby, 2012). Ruby (2012) stated that there are five common motivations to follow a vegetarian diet: (1) ethical and moral concerns, (2) personal health concerns, (3) the impact of producing and consuming meat has on the environment, (4) spiritual purity, and (5) disgust at certain properties in meat. According to Fox and Ward (2008), the top two reasons for becoming vegetarian were ethical concerns about raising and slaughtering animals and concern for personal health.

Ruby (2012) suggested that people's motivations to become and stay vegetarian are dynamic and continually change. A sample of vegetarian adults conducted in the United Kingdom indicated 74% of participants had stated a change in motive (Hamilton, 2006). Although more studies on vegetarianism in the general population have been conducted in recent years, there is a dearth of studies on vegetarian athletes. Also, there is a lack of research on vegetarianism in highly

conservative areas in the United States. With the growing acceptance of vegetarianism, this study aimed to answer questions about vegetarianism among collegiate athletes to analyze the differences and/or similarities among vegetarian athletes and vegetarians in the general population. The purpose of this study was twofold: (1) to investigate the prevalence of vegetarianism among college athletes at a public university in the northwest region of the United States, and (2) to investigate the perceptions vegetarians athletes hold at this institution about vegetarianism.

Hypotheses

Based off of previous research (Ruby, 2012), I hypothesized I would find few vegetarian athletes at the public university in which this study was conducted. This location of the United States is conservative where vegetarianism is uncommon (Ruby, 2012). Second, I hypothesized that non-vegetarian athletes would have a negative perception of vegetarian athletes (Ruby, 2012).

Operational Definitions

Health effects. For the purpose of this study, there were two categories of health effects: positive health effects and deficiencies. In this study, a positive health effect was defined as a factor that contributes to good health or improving one's health and the functioning of the human body. Also, for the purpose of this study, a deficiency was defined as the state of not having an adequate amount of nutrients necessary for proper functioning of the human body as it relates to health.

Lacto-ovo-vegetarian. Lacto-ovo-vegetarians avoid all meat, seafood, and poultry, but include dairy products and eggs (Barr & Rideout, 2004)

Lacto-vegetarian. Lacto-vegetarians avoid all meat, seafood, and eggs, but include dairy products (Barr & Rideout, 2004).

Macrobiotic. Macrobiotic vegetarians avoid most animal-derived foods and emphasizes unprocessed organic foods (Barr & Rideout, 2004).

Non-Vegetarian. A non-vegetarian was defined as one who consumes meat, poultry, and fish and does not follow a vegetarian diet.

Ovo-vegetarian. Ovo-vegetarins avoid all meat, poultry, seafood, and dairy products, but include eggs (Barr & Rideout, 2004)

Semi Vegetarian. Semi vegetarians avoid some meat, mostly red meat (Barr & Rideout, 2004)

Student athlete. For the purpose of this study, a student-athlete was defined as any full time student in good academic standing who was currently and actively participating on a university-sponsored intercollegiate athletic program recognized by the NCAA. Student athletes may or may not receive athletic scholarships (NCAA, 2014).

For the purpose of this study, I included cheerleaders as student athletes. I included cheerleading because it was NCAA sanctioned last academic school year (2012-2013) and the university's athletic department sponsors the cheerleading program. In addition, researchers have suggested that gender plays a major role in the prevalence of vegetarianism (Ruby & Heine, 2011; Sobal, 2005). Therefore, I included cheerleaders in my study to increase the number of vegetarians available for inclusion in this study.

Stigma. For the purpose of this study, stigma was defined as a set of negative and often unfair beliefs that society has towards something (Romo & Donovan-Kicken, 2012).

Vegan. Vegan refers to a diet that is devoid of all animal-derived foods (Barr & Rideout, 2004).

Vegetarian diet. For the purposes of this study a vegetarian was someone who self-identified into one of the six categories according to Barr and Rideout (2004) (see Appendix E). In addition, a vegetarian diet does not mean one consumes this diet to reduce caloric intake for the sole purpose of weight loss. It simply refers to the dietary habits they have chosen.

Vegetarian. A vegetarian was defined as a person who consumes a vegetarian diet who identified their eating behaviors according to one of the six categories suggested by Barr and Rideout (2004) (see Appendix E). The vegetarian diet includes, grains, vegetables, fruits, and nuts and sometimes dairy or egg products.

Research Questions

The following research questions guided this study:

1. How prevalent is vegetarianism among college athletes at this institution?
2. What are the motivations behind an athlete's decision to become vegetarian?
3. Are athletes aware of any deficiencies in a vegetarian diet?
4. Are athletes aware of positive health effects with a vegetarian diet?
5. Do non-vegetarian athletes have a negative stigma about a vegetarian diet at this institution?

Assumptions, Delimitations, Limitations

Assumptions. In this study, I assumed participants understood the definition of a vegetarian diet specifically used for this study. Also, I assumed participants understood the questions on both the survey instrument and in the interview and answered those questions honestly.

Delimitations. In this study, I delimited the focus to one university in the Northwest region of the United States. I further delimited participants by looking at only student athletes at the university. I restricted this study to college student athletes at this university because the purpose of this study was to examine the prevalence and perceptions of vegetarianism among student athletes.

Limitations. One limitation in this study was my role as a researcher. I have been vegan for a little over a year and found it important to research vegetarianism extensively. Therefore, my bias could be represented in this paper. However, I used several triangulation and bias control methods to conduct my research, analyze my data, and present my results. The research conducted in this study cannot be generalized to all student athletes for multiple reasons. First, the sample size in this study was very small compared to the population of all college student athletes and, therefore, is not representative of the entire population. In addition, this study followed a mixed methods approach that included a qualitative and exploratory portion; therefore this study could not claim to be generalizable to the entire college student athlete population. In addition, I used a sample of convenience for this study. There are limitations to convenience sampling because participants were selected for

convenience or ease of access (Baumgartner & Hensley, 2013). Participants were not randomly selected which does not allow the results of the data to be generalizable to the entire population.

Conclusion

The purpose of this study was two-fold: (1) to investigate the prevalence of vegetarianism among college athletes at a public university in the northwest region of the United States, and (2) to investigate the perceptions vegetarians athletes hold at this institution about vegetarianism. While studies on vegetarianism have increased, the same cannot be said about studies on vegetarian athletes. According to Ruby (2012), vegetarians tend to be associated with liberal values and omnivores more associated with conservative values. In addition, recent literature indicates that in cultures where meat is a significant proportion of the GDP, refusal to eat meat can draw intense criticism (Ruby, 2012). There is a dearth of research that has been conducted in highly conservative areas of the United States where vegetarianism is uncommon (Ruby, 2012). This study aims to fill this gap by conducting a descriptive, mixed-methods study among student athletes in a highly conservative area where vegetarianism is believed to be uncommon.

Chapter II

Literature Review

The purpose of this study was two-fold: (1) to investigate the prevalence of vegetarianism among college athletes at a university in the northwest region of the United States, and (2) to investigate the perceptions of vegetarianism athletes hold at this institution. In this chapter, the following major topics related to the purpose of this study are reviewed: (a) vegetarianism in the general population, (b) health effects, (c) perceptions of vegetarians, and (d) vegetarian athletes.

Vegetarianism in the General Population

In the past vegetarians who refused to eat were persecuted which often resulted in death. Luckily, in modern society this is not the case, however vegetarians may suffer from "social death" (Kellman, 2000, p. 85). Kellman (2000) explains social death as hostile interrogations by friends and family that question a person's abstinence from meat, which often leads to harsh criticism. According to Romo and Donovan-Kicken (2012), an individual whose decision or values deviate from mainstream beliefs are often stigmatized. Romo and Donovan-Kicken (2012) conducted face to face, semi-structured, in-depth interviews with 20 vegetarians from a southwestern city. The goal in their study was to discuss how they personally engaged in conversation about their vegetarianism to vegetarians and non-vegetarians (Romo & Donovan-Kicken, 2012). Despite the significant positive health effects associated with vegetarianism, researchers suggest that

vegetarianism has been stigmatized because it deviates from mainstream beliefs. In addition, vegetarians who were aware of this tailored their communication accordingly (Romo & Donovan-Kicken, 2012). Further, researchers suggested that the more aware vegetarians were of this stigma, the less they communicated their vegetarianism with non-vegetarians (Romo & Donovan-Kicken, 2012).

Ultimately, vegetarianism made a huge impact on their social life that affected their relationship with friends and family (Romo & Donovan-Kicken, 2012). As a result, Romo and Donovan-Kicken (2012) found two prominent dilemmas in their communication: (a) wanting to be true to one's self, and (b) wanting to fit in and talking about vegetarianism without judging others for eating meat. Romo and Donovan-Kicken (2012) found the number one communication dilemma was "to be true to one self while attempting to fit in" as is evidenced in the following quote:

> Participants wanted to be honest and forthright about their eating habits to reinforce and share their identities and to build relationships with others. However, at the same time, because every participant realized they were in the minority, they had the competing goal of wanting to fit in and to get along with the other people without drawing attention to themselves (p. 410).

As a result of these two dilemmas, 65% of participants indicated the importance of devising a plan for social settings where communication about one's dietary habit may arise (Romo & Donovan-Kicken, 2012). A prominent theme in the communication of vegetarianism to non-vegetarians was minimizing others' discomfort (Romo & Donovan-Kicken, 2012). Participants indicated that minimizing others' discomfort was achieved in four ways: (1) making vegetarianism a personal choice, (2) tailoring disclosure, (3)

downplaying the significance of their diet, and (4) stretching the truth (Romo & Donovan-Kicken, 2012). Half of the participants disclosed their vegetarianism as a personal choice, meaning they focused on "I/me statements" that steered the conversation away from potential judgment of others' choices (Romo & Donovan-Kicken, 2012, p. 414). In the study, 65% of participants tailored their disclosure of vegetarianism towards the other person's beliefs whether they were an animal lover or health conscious (Romo & Donovan-Kicken, 2012).

In sum all participants in Romo and Donovan-Kicken's partook in some form of "downplay" which included avoiding the term vegetarian, shortening the conversation, and focusing on their relationship with people instead of their identity (Romo & Donovan-Kicken, 2012, p.415). All participants indicated they avoided labeling themselves as vegetarian because many non-vegetarians associated the word "vegetarian" as an activist (Romo & Donovan-Kicken, 2012). Finally, 10% of participants stretched the truth or actually lied about being their dietary choices to achieve social acceptance (Romo & Donovan-Kicken, 2012). Lying about their dietary habits allowed participants to eat a meat free meal and avoid conversations about vegetarianism and any conflict that arose (Romo & Donovan-Kicken, 2012). Overall, vegetarians were faced with a daily dilemma in social settings, which was the goal of achieving social acceptance while trying to uphold one's values (Romo & Donovan-Kicken, 2012).

Perceptions of Vegetarians

According to Ruby (2012) vegetarianism is viewed by the general population as negative and may carry a negative social stigma. According to Romo and Donovan-Kicken (2012), an individual whose decision or values deviate from mainstream beliefs

have been historically stigmatized. In the 12th century, the Roman Catholic Church declared vegetarians to be heretics and were persecuted (Kellman, 2000). In Utah, a student was suspended for wearing a t-shirt with "vegan" across the front (Grossman, 2004). These high school administrators defended the suspension by stating, "veganism was a gang-related activity" (Grossman, 2004, p. 16). Since vegetarians only make up 3% of the total population in the United States, researchers suggest that they may be seen as deviant and an easy target for social criticism (Romo & Donovan-Kicken, 2012). In addition, Ruby (2012) stated the general public views vegetarians as "weak" (p. 147). The negative stigma towards vegetarianism could be a reason why more do not partake in this dietary change.

In addition to a negative stigma, vegetarians may be stereotyped based on a social concept related to the gendering of foods (Sobal, 2005). According to Sobal (2005), the gendering of foods is not biologically based; instead it is socially constructed and varies according to each culture. Throughout history, meat has represented masculinity and power by many cultures (Ruby & Heine, 2011). In European history, meat was a symbol of power and privilege because it was only available to the upper class (Ruby & Heine, 2011). In addition, during World War I meat was consistently sent to male combatants (as opposed to being provided to non-military civilians) because it was thought that soldiers needed the extra nutrients from meat (Ruby & Heine, 2011). In Western societies, meat has become a culturally accepted and typical food associated with masculinity (Ruby & Heine, 2011). According to Sobal (2005), a "real" meal is one that includes meat (p. 138).

Further, social stereotypes regarding gendered behavior, such as hunting, has been associated with the gendering of food (Sobal, 2005). Pervasive gender stereotypes have been association with hunting and killing and often serve as a demonstration of power and dominance (Sobal, 2005). Sobal (2005) indicated that men who are able to hunt assert their dominance by hunting, killing, and eating animals because men in Western cultures are often characterized by the suppression of emotions. According to Sobal (2005) manhood is earned through social displays, competition, and aggression in most cultures. According to Ruby and Heine (2011), eating meat is an easy way to display manhood as people view vegetarians as less masculine than omnivores (Ruby & Heine, 2011). Therefore, consuming a vegetarian diet may lead to negative social implications regarding masculinity or manhood despite the positive benefits of a vegetarian diet (Ruby & Heaine; 2011; Sobal, 2005).

The concept of food gendering could further be explained by food choices made during one's adolescence. In a study conducted with 1,818 students in grades 3-12, the authors found that girls had a greater preference for starches and sweets or fruits and vegetables (Caine-Bish & Scheule, 2009). In the same study, researchers stated that boys had a higher preference for food such as beef, pork, BBQ, fish and casserole entrees (Caine-Bish & Scheule, 2009). According to Granner et al. (2004), girls avoided foods that may cause weight gain. Historically, it was believed that women were more susceptible to media influences which often portray an unrealistic stereotype of a woman's body (Grenner et al., 2004). Men are affected in the same way, however it may not be as severe (Caine-Bish & Scheule, 2009). This could play a role in the food choices between men and women because women may be more concerned about weight

loss and/or maintenance (Caine-Bish & Scheule, 2009). Ultimately, this may lead women to choose less fatty foods such as fruits and vegetables (Caine-Bish & Scheule, 2009).

Health Effects

Positive health effects. One of the top motivations for vegetarianism is personal health concern (Fox & Ward, 2008). This is because a balanced vegetarian diet may provide an individual with positive health effects (Clifton & Tapsell, 2013; Fraser, 2009). One of these positive health effects is the reduction of coronary heart disease (CHD) by 32% (Clifton & Tapsell, 2013; Fraser, 2009). The reduction of CHD from the consumption of a vegetarian diet is largely due to low levels of Low-Density-Lipoproteins (LDL) cholesterol. Lower levels of LDL cholesterol, is due to two key components of the vegetarian diet: The consumption of nuts and whole-grains, and a diet devoid of all or most meat (Frasier, 2009). Higher risk of CHD is associated with the consumption of animal fats, which raises LDL cholesterol (Crowe, Appleby, Travis, & Key, 2013). This positive health effect may influence a person's dietary choices.

In addition to a reduction in CHD, a vegetarian diet is associated with a reduction in ovarian and colon cancer (Craig, 2009; Kiani et al., 2006; Singh & Fraser, 1998). In addition, Kiani et al. (2006) found that those who had higher cheese consumption were at an increased risk for ovarian cancer. The researchers also stated that higher intake of fruits and vegetables were associated with a decreased risk of ovarian cancer (Kiani et al., 2006). Tomatoes also appeared to have a strong protective physiological effect, which was due to the antioxidant activity of lycopene (Kiani et al., 2006). Cruciferous vegetables, fruits, and legumes were associated with a decrease in risk of colon cancer

(Singh & Fraser, 1998). Specifically, Craig (2009) found fruits and vegetables contain a mixture of phytochemicals that interfered with the progression of cancer at a cellular level.

Several studies show a positive correlation between meat intake and colon cancer (Craig, 2009; Singh & Fraser, 1998). According to Craig (2009), Body Mass Index (BMI) was a possible protective factor against cancer risk due to a lower average BMI in vegans compared to non-vegetarians. Also, a vegan's diet contained more total fruit, vegetables, tomatoes, legumes, allium vegetables, fiber, and vitamin C compared to non-vegetarians (Craig, 2009). Due to the dietary choices, these researchers found that vegetarians were at a decreased risk of both colon and ovarian cancer (Craig, 2009; Kiani et al., 2006; Singh & Fraser, 1998).

Other positive health impacts of a vegetarian diet included protective qualities against type 2 diabetes. Lower BMI of vegetarians played a part in the protection against type 2 diabetes (Tonstad et al., 2009). According to Tonstad et al. (2009), vegetarian diets, specifically vegan and lacto-ovo vegetarian, were associated with a one-half reduction of type 2 diabetes. In addition, vegetarian diets were associated with an increase of insulin sensitivity (Kahleova et al., 2010). Also, the addition of exercise with a vegetarian diet increased protection against type 2 diabetes (Kahleova et al., 2010). According to Kahleova et al. (2010), exercise training increased protection against type 2 diabetes because exercise reduced insulin resistance. Another factor that increased protection against type 2 diabetes was the reduction of LDL cholesterol due to a vegetarian diet (Kahleova et al., 2010). The vegetarian diet led to a protection against type 2 diabetes as a result of consuming more fruits and vegetables compared to non-

vegetarians and reducing one's amount of meat intake (Kahleova et al., 2010; Tonstad et al., 2009).

Dietary deficiencies. Although a vegetarian diet does have some positive health benefits, it can lead to a deficiency in certain nutrients if one does not consume a balanced diet (Pawlak et al., 2013). Vitamin B-12 is an essential part of everyone's diet because it is a key component in DNA synthesis and a key factor in the maintenance and repair of neural axons (Pawlak et al., 2013). In the past, researchers believed that only strict vegans ran the risk of vitamin B-12 deficiency (Allen, 2009). However other researchers have found that all vegetarians could develop a vitamin B-12 deficiency (Pawlak et al., 2013). According to Pawlak et al. (2013), "one of the main findings is that vegetarians may develop B12 deficiency regardless of demographic characteristics, place of residency, age, or the type of vegetarian diet consumed" (p. 112). These researchers suggested that supplementation of vitamin B-12 is an integral part of a vegetarian diet. However, in the literature, it was hard to determine a percentage or deficiency rate due to the inconsistent deficiency markers. Overall, it is important to understand that regardless of one's vegetarian diet, all vegetarians should be aware of a potential vitamin B-12 deficiency.

In addition to B-12, creatine was another area where vegetarians were deficient (Brosnan & Brosnan, 2007; Kreider, Leutholtz, Katch & Katch, 2009; Watt et al., 2004). Creatine is a major component in competitive athletics (Kreider et al., 2009). It is consistently stated throughout the literature that vegetarians have lower initial muscle total creatine content compared to non-vegetarians (Brosnan & Brosnan, 2007; Kreider, Leutholtz, Katch & Katch, 2009; Watt et al., 2004). However, vegetarians who

supplement creatine could have higher total creatine content (Brosnan & Brosnan, 2007; Kreider et al., 2009; Watt et al., 2004). Vegetarians could have higher total creatine content because their baseline is lower compared to non-vegetarians (Brosnan & Brosnan, 2007; Watt et al., 2004). According to Kreider et al. (2009), individuals who have a lower creatine content prior to supplementation could see an increase of 20-40%, while those who already have a high baseline creatine content could see an increase of 10-20%.

Creatine supplementation is important to vegetarian athletes for three reasons: (1) it can help maintain availability of energy during high intensity exercises such as sprinting and weightlifting; (2) it can help speed recovery between sprints or intense exercise; (3) ultimately leading an athlete to do more work and have greater gains in strength, muscle mass, and performance (Kreider et al., 2009). The most common way to supplement creatine was a method called "loading" (Kreider et al., 2009, p. 199). "Loading" could be achieved in one week by consuming .3 grams/kilogram of weight per day of creatine monohydrate (Kreider et al., 2009). After one week of "loading", athletes consumed between three to five grams per day to maintain the elevated creatine stores achieved by "loading" (Kreider et al., 2009). Overall, there were about 1,000 peer-reviewed articles published about creatine supplementation and 70% of these indicated creatine promotes a statistically significant improvement in exercise capacity (Kreider et al., 2009). Due to the benefits of creatine it has been suggested that it is important for vegetarians who have a lower baseline of creatine to supplement to elevate their baseline levels (Brosnan & Brosnan, 2007; Kreider, Leutholtz, Katch & Katch, 2009; Watt et al., 2004).

Another area of a vegetarian diet that draws intense criticism is lack of protein (Fuhrman & Ferreri, 2010). Despite the success of vegan athletes such as Tony Gonzalez, Brendan Brazier, Carl Lewis, and Kenneth Williams, plant-based diets for athletes are still highly critiqued (Fuhrman & Ferreri, 2010). Although studies indicating that a balanced vegetarian diet can produce similar performance results as a non-vegetarian diet, concerns still persist (Fuhrman & Ferreri, 2010). Fuhrman and Ferreri (2010) state that athletes do need a greater quantity of protein compared to sedentary individuals, however the amount athletes need is still debated in the scientific community. Fuhrman and Ferreri (2010) stated consuming more than 2.0 g/kg showed no extra benefit and actually could be harmful to the body; the International Society of Sports Nutrition recommended 1.0 – 1.6 g/kg for an endurance athlete and 1.6 – 2.0 g/kg for strength athletes (Fuhrman & Ferreri, 2010).

Kreider et al. (2009) recommended athletes who are involved in moderately intense training should consume 1.0 – 1.5 g/kg compared to athletes who are involved in high volume of intense training should consume 1.5 – 2.0 g/kg of protein. In addition, in 2009 the Swiss Forum for Sport Nutrition estimated athletes should consume 1.6 – 1.9 g/kg of protein depending on duration and intensity (Fuhrman & Ferreri, 2010). According to Fuhrman and Ferreri (2010), vegetarians could consume enough protein from a properly planned and balanced diet; however, vegetarians must consider their individual energy requirements to reach their protein requirements. Fuhrman and Ferreri (2010) suggested that vegetarian athletes should look to whole food sources of protein such as tofu, nuts, and seeds instead of isolated soy, rice, hemp, or pea proteins. It is also important to avoid isolated proteins for two reasons: (1) compared to whole foods,

isolated proteins are micronutrient-poor; (2) studies have confirmed isolated proteins from plant sources elevate insulin-like growth factor 1 (IGF-1), which could increase the risk of cancers (Fuhrman & Ferreri, 2010). Overall, protein supplementation was not needed in a properly planned vegetarian diet where consumption of protein rich plants is increased according to the individual's energy requirements (Fuhrman & Ferreri, 2010).

Vegetarian Athletes

Throughout the years, many vegetarian athletes have been successful in their sport at the professional level. The most famous examples are Carl Lewis, Brendan Brazier, Tony Gonzalez, Arian Foster, Kenneth Williams, Joe Namath, Martina Navratilova, Tony La Russa, Robert Parish, Prince Fielder, Dave Scott, and Billie Jean King (Furhman & Ferreri, 2010; Merchant, 2013). The sports these athletes play include professional football, baseball, tennis, cycling, bodybuilding, track and field, and triathlon (Furhman & Ferreri, 2010; Merchant, 2013). According to the American Dietetic Association (ADA) (2010), a proper and balanced vegetarian diet is nutritionally adequate for all stages of life and for athletes.

Regardless of the sport or competition, the goal for every athlete is to be healthy and have the opportunity to train and compete. Avoiding disruptions due to illness or injury are a main concern for all athletes in any sport or competition. According to Furhman and Ferreri (2010), athletes are more susceptible to upper respiratory tract infections:

> High-performance athletes demonstrate mildly suppressed immune function and often experience increased incidence of upper respiratory tract infections. These symptoms are thought to be a consequence of the long-term stresses of intense

> daily training. Even in the short term, a single intense workout temporarily diminishes immune function (p. 234).

Therefore, the importance of diet plays a large role in the recovery from daily exercise and competitions. The associated advantages of a vegan or near vegan diet are the increased capacity of the immune system due to a diet high intake of anti-oxidant rich foods (Furhman & Ferreri, 2010). This is an important concept because research has shown that exercise is associated with oxidative stress (Trapp, Knez, & Sinclair, 2010). According to Trap, Knez, and Sinclair (2010), "Oxidative stress is a natural biological phenomenon whereby an imbalance occurs between the quantity of free radicals produced and the ability of the body's antioxidant defense systems to neutralize them" (p. 1263). A vegetarian diet is associated with a higher intake of vitamin C, vitamin e, and beta-carotene (Trapp, Knez, & Sinclair, 2010). Therefore, some suggest that vegetarians, specifically vegans consuming mostly raw foods, are able to alleviate some of the exercise induced stress because of the higher content of anti-oxidants in their body (Trapp, Knez, & Sinclair, 2010). Staying healthy and fit to compete is the goal for every athlete, which could explain why vegetarian diets are gaining some momentum in the sports world. However, just because someone is a vegetarian does not mean they eat a healthy diet. A well balanced diet is necessary for any athlete and especially for vegetarian athletes to ensure all the necessary nutrients are being obtained (Furhman & Ferreri, 2010).

Conclusion

As stated previously, there has been little research conducted on vegetarian athletes primarily in highly conservative areas of the United States (Fuhrman & Ferreri,

2010; Ruby, 2012). In this literature review three main issues associated with choosing a vegetarian diet were presented: (1) the social stigma associated with a vegetarian diet (2) positive health effects, (3) deficiencies in the vegetarian diet. According to the literature, a vegetarian diet can lead to a reduction of CHD, a reduction in colon and ovarian cancer, and protection against type II diabetes (Clifton & Tapsell, 2013; Craig, 2009; Fraser, 2009; Kahleova et al., 2010; Kiani et al., 2006; Singh & Fraser, 1998; Tonstad et al., 2009). Researchers also suggest there is strong evidence indicating there are deficiencies in some vegetarian diets that require a proper nutrition planning (Pawlak et al., 2013; Watt et al., 2004). The literature reviewed in this section also suggests that, due to the gendered nature of food, a choice to become vegetarian can impact one's lifestyle socially (Romo & Donovan-Kicken, 2012). As stated above, the goal for all athletes is to stay healthy and fit to be able to compete in their sport. Eating a healthy and balanced diet is an important factor for all athletes. There is conflicting research regarding vegetarian diets and the reduction of oxidative stress due to a high intake of anti-oxidant rich foods (Trapp, Knez, & Sinclair, 2010). However, it does indicate that further research needs to be conducted on the effects of a vegetarian diet on athletes (Trapp, Knez, & Sinclair, 2010). More research is required to study the occurrence of vegetarianism among athletes and the social perceptions people attribute to vegetarian athletes. Therefore, the purpose of this study was to investigate the prevalence of vegetarianism among college athletes at a University in the Northwest region of the United States. Further, I aimed to investigate the perceptions of vegetarianism athletes hold at this institution. This study aimed to fill this gap by investigating the dietary

perceptions among athletes in a highly conservative area where vegetarianism is believed to be uncommon.

Chapter III

Methods

Introduction

This study aimed to fill a knowledge gap concerning the prevalence and perceptions of vegetarian athletes in a highly conservative area where vegetarianism is believed to be uncommon (Ruby, 2012). This study could provide additional information to develop future theoretical foundations. The purpose of this study was two-fold: (1) to investigate the prevalence of vegetarianism among college athletes at a public university in the northwest region of the United States, and (2) to investigate the perceptions vegetarians athletes hold at this institution about vegetarianism. In this chapter, I will discuss the following: (1) research design, (2) participants, (3) instruments, (4) procedures, and (5) data analysis.

Research Design

In this study a mixed methods design was utilized. I used a mixed method approach to provide in-depth data from multiple approaches. A mixed methods approach is not as vulnerable to errors associated with a strict quantitative or qualitative study because it combines methods together (Patton, 2002). Each approach has its weakness and can be complimented by another approach and therefore is strengthened by a mixed methods approach (Patton, 2002). In my study, “methodological triangulation” was achieved by using both quantitative and qualitative methods to arrive at the common

themes from both (Patton, 2002, p. 247). This triangulation allowed me to see the data from different perspectives. A qualitative approach was appropriate for this study because I wanted to explore the perceptions of both vegetarian athletes and non-vegetarian athletes (Baumgartner & Hensley, 2013, p. 93). This study is descriptive in nature because it attempted to gather information from a specific group in order to describe accurately specific characteristics that presently exist (Baumgartner & Hensley, 2013).

In this study, the interpretive framework I used for the qualitative portion was social constructivism. Social constructivism relies heavily on participants' views of the situation and their subjective meanings of their experiences (Creswell, 2013). These subjective meanings are formed from historical and cultural norms that are different for each individual (Creswell, 2013). According to Creswell (2013), a social constructivist paradigm helps the researcher inductively identify theory or patterns through interaction with participants and the subjective meanings they divulge (Creswell, 2013). In practical terms, the perceptions participants have towards vegetarianism will be largely based on the cultural subjective meanings they have developed over the years. It the researcher's responsibility to interpret and detect patterns and theories among the data.

I combined social constructivism with methodologic philosophical assumptions to interpret the data. Methodologic philosophical assumptions focus on details of the research and are shaped by the interactions between the researcher and the participants (Creswell, 2013). Creswell (2013) stated that researchers may change questions and/or data collection methods in the middle of the study to better understand and answer the research questions. This philosophical assumption is highly inductive and is based off of the interactions between the researcher and the participants (Creswell, 2013). Ultimately

social constructivism and methodologic philosophical assumptions allowed me to inductively identify emergent themes and patterns through interviewing participants.

Survey Participants and Sampling

In this study, participants were student athletes a public university in the northwest region of the United States. The institution chosen was an NCAA Division I university with approximately 12,000 full time and part time students. The university sponsors 14 intercollegiate sports - five for men and nine for women. All participants were student athletes. There were approximately 311 student athletes who were surveyed. There were 161 male athletes and 151 female athletes. In addition, 228 athletes are from the northwest region of the United States. In addition, there were 18 athletes who are from outside the United States. The other state with the most athletes was California with 57 athletes. Only 170 athletes responded to the survey; 60 surveys were collected online and 110 were collected via hardcopy. Convenience sampling was used in this study because the population was selected based on ease of access (Baumgartner & Hensley, 2013). Convenience sampling technique refers to the idea of selecting participants based off of accessibility and convenience (Baumgartner & Hensley, 2013).

Interview Participants and Sampling

Based on the results of this survey and my own knowledge of vegetarian student athletes at the university, another set of participants were selected for in-person interviews. Participants were selected for the first set of interviews if they identified as vegetarian. There were two vegetarians from male sports (Football) and two vegetarians from female sports (Co-ed Cheerleading) were selected. The second set of interviews

was conducted with participants who identified as non-vegetarians; three of which were from female sports (Co-ed cheerleading and Women's Track and Field) and the other three were from male sports (Men's Football, Co-ed Cheerleading). I used purposive sampling and a snowballing technique to select non-vegetarian participants to interview and to find the vegetarian athletes at the institution (Baumgartner & Hensley, 2013). Purposive sampling was used in this study because I was interested in specific characteristics of a certain population and their ability to answer questions related to my research questions (Baumgartner & Hensley, 2013). A snowballing technique is a chain referral sampling method that relies on participants who are contacted to refer the researchers to another individual in the target population (Heckathorn, 2002). The age range of these athletes was between 18 and 25.

Instruments

Survey instrument. A quantitative survey was distributed to all student athletes at the chosen institution (see Appendix A). According to Baumgartner and Hensley (2013, p. 92), a survey or descriptive approach is appropriate when the researchers are interested in the attitudes of the participants without manipulating the variables. The purpose of this survey was to gather general demographics and perceptions towards vegetarians from a specific population. The survey consisted of sixteen open ended, structured, and Likert scale questions (see Appendix A). The first four questions were demographic questions related to age, sport, gender, and academic class. One question asked if the participant self-identified as vegetarian. Two questions gauged participants' perceptions towards a vegetarian diet. Two questions determined participants' awareness

of a gender gap in vegetarianism. Three questions investigated participants' awareness or perception of a stigma associated with vegetarian diets.

Semi-structured interviews. A semi-structured interview approach is used when participants are asked the same general questions and is a good strategy when questions can be formulated in advance (Baumgartner & Hensley, 2013). I created two semi-structured interview guides (see Appendices B & C) to interview participants who identified as vegetarians and those who identified as non-vegetarian.

Procedures

Pilot study. Upon Institutional Review Board (IRB) approval (see Appendix D), a pilot study was conducted. A pilot study is considered a trial run of a main study and can provide helpful feedback on proposed methods, instruments, and possibly downfalls of the major study (Van Teijlingen & Hundley, 2001). I selected three former collegiate student athletes to take the survey. I selected former athletes because they have competed at the collegiate level and were very similar to the population I was studying. I administered the survey online via email using Survey Monkey. Next, I conducted a pilot interview with a former collegiate student athlete. As a result of conducting the pilot study, a correction to the wording on one question was made. The question asked the participants' opinions on how a vegetarian diet would impact their health. A revision to the question helped to clarify it for participants. This change was approved by the ISU IRB panel (see Appendix I.)

Main study survey distribution. After pilot data was collected and analyzed, I contacted the institution's athletic director to receive approval to contact student athletes. Next, I asked the Assistant Athletic Director for Academics to administer the survey via

email to all student athletes at the university. After one week, I asked the assistant director of athletics to re-send the email. At this point, I did not receive an adequate number of surveys (i.e., n=169) to be representative of this population (Baumgartner & Hensley, 2013).

In order to increase the survey response rate, I sought permission from each coach to personally administer a hard copy of the survey to their athletes. I received responses and approval from two coaches and coordinated a convenient time to meet and distribute my survey. During the team meeting, I personally handed out the surveys to all participants at the meeting and collected them myself. I provided all pens and hard copies of the survey needed. In addition, I included a statement at the bottom of my survey stating, "If you are interested in participating in an interview about your experiences related to vegetarian athletes, please contact me directly at ariajust@isu.edu".

Main study interviews. After the survey was conducted, I then conducted face-to-face interviews with both vegetarian and non-vegetarians athletes (see Appendices B & C). I interviewed four participants who self-identified as vegetarian, which consisted of two females and two males from Men's Football and Co-ed Cheerleading. I also interviewed six non-vegetarians, three males and three females. Interviewees for both interviews represented the following sports: Men's football, Cheerleading, Women's Soccer, and Women's Track and Field. I conducted each interview face-to-face with a recording device and transcribed these interviews verbatim. For the purposes of confidentiality, I assigned all participants a pseudonym.

Data Analysis

Quantitative data analysis. Quantitative data analysis was conducted in Statistical Package for the Social Sciences (SPSS). Descriptive statistics were used to display quantitative data to increase the strength of the analysis. The following descriptive statistical techniques were used to analyze the survey data: (a) mean, (b) mode, (c) percentage, and (d) standard deviation.

Qualitative data analysis. I used an inductive analysis approach to analyze the qualitative data (Thomas, 2006). The interpretive framework I used along with inductive analysis was social constructivism. I used a social constructivism framework to analyze the results of my survey and interviews. This approach begins with an area of study and allows consistent themes or theories to emerge from the data collected (Thomas, 2006). An inductive approach to analysis allowed me to present a large amount of raw data in a summary format (Thomas, 2006). In addition, Thomas (2006) stated that inductive analysis is commonly used in health and social science research. In my study, the raw data collected from qualitative responses in my survey and interviews guided me towards emerging themes. A table of the raw data from the vegetarian interviews is provided in Appendix J. Also, a table of the raw data from the non-vegetarian interviews is provided in Appendix K.

Data analysis triangulation. I conducted both member checking and investigator triangulation to ensure the validity of the qualitative analysis (Patton, 2002). Investigator triangulation uses additional researchers or evaluators to ensure validity of the data (Patton, 2002). In this case, investigator triangulation was used to make certain that inductive analysis was performed correctly and the two evaluators arrived at common

themes. Independently I conducted investigator triangulation for thematic analysis while another qualitative researcher analyzed the same transcribed interviews. We both created a thematic structure which we felt represented participants' experiences. We then met, discussed our themes, and came to a consensus on the final thematic structure. This process of investigator triangulation allowed a consensus of the thematic analysis or patterns that occurred in the data (Patton, 2002).

Another triangulation technique I used was member checking which refers to the process of sending data analysis back to participants and allowing them to make changes or to verify that it is correct (Baumgartner & Hensley, 2013). In my study, member checking was conducted by sending a word document to the participants containing their verbatim transcribed interview for verification and/or modification. No feedback was provided by any participant through member checking.

Another source of triangulation used was the process of collecting multiple sources of data to ensure the researcher arrives at the correct interpretation (Baumgartner & Hensley, 2013; Patton, 2002). In my study, methodological triangulation was achieved by using a mixed methods approach utilizing surveys that assessed participant's perceptions and interviews to assess participant's perceptions as well.

Conclusion

The purpose of this study was to investigate the prevalence of vegetarianism among college athletes at a public university in the northwest region of the United States. A second purpose of this study was to investigate the perceptions of vegetarianism athletes hold at this institution. Due to the qualitative and exploratory nature of this study, it cannot be generalized to the entire collegiate student athlete population.

However, this information can provide a theoretical foundation for future research. This study aimed to fill an informational gap related to the prevalence and perceptions of student athletes in a highly conservative area where vegetarianism was believed to be uncommon (Ruby, 2012).

Chapter IV

Results

Introduction

This study aimed to fill a knowledge gap concerning the prevalence and perceptions of vegetarian athletes a highly conservative area where vegetarianism is believed to be uncommon (Ruby, 2012). This study could provide additional information to develop future theoretical foundations to understand the perceptions vegetarian student athletes encounter. The purpose of this study was two-fold: (1) to investigate the prevalence of vegetarianism among college athletes at a public university in the northwest region of the United States, and (2) to investigate the perceptions vegetarians athletes hold at this institution about vegetarianism. In this chapter, I will discuss the following: (1) quantitative survey results, (2) qualitative survey results, (3) vegetarian interview results, and (4) non-vegetarian interview results.

Survey Results

A total of 170 participants responded to the survey (see Table 1 for participant response rate). Of the 170 responses, 64.7% (n=110) were collected via hard copy while 35.3% (n=60) were collected via online. Only six respondents (3.5%) indicated that they self-identified as a vegetarian. The question that asked, “On a scale of 1 to 5, how well do you think you could perform your sport consuming a vegetarian diet?” respondents perceived they could not perform as well in their sport if they consumed a vegetarian diet. The respondents had a mean response of 2.47 with a standard deviation of .913. In

addition, 74% (n=125) of respondents indicated a vegetarian diet had a negative impact on health or that they were neutral. Only 26% (n=44) of respondents believed a vegetarian diet had a positive impact on health. Similarly, 62.4% (n=106) of respondents perceived a vegetarian diet was not nutritionally adequate for college athletes. In addition, when respondents were asked, "If vegetarianism were associated with substantial evidence to be an adequate diet for a collegiate athlete, would you consider consuming vegetarian diet?" 66.5% (n=113) of respondents indicated that they would not consider a vegetarian diet even with substantial evidence supporting a vegetarian diet. However, respondents' perceptions were almost split about whether athletes in specific sports were more likely to consume a vegetarian diet. A total of 44.2% (n=73) of survey respondents believed athletes in certain sports were more likely to consume vegetarian diets, while 55.8% (n=92) of survey respondents indicated otherwise.

Qualitative Survey Results

The open-ended answers were very limited and, thus, no inductive analysis was performed. Instead, a brief summary of this data is presented and respondent's answers are categorized into common concepts and are displayed in percentages. Question number one asked participants to "explain why you believe a vegetarian diet could impact your health either positively or negatively." Two major themes emerged. One of those major themes was misconceptions about a vegetarian diet. Over 50% (n=73) indicated that there were several misconceptions such as protein and iron concerns and the indication that meat is healthy for athletes. The responses indicated that the majority of respondents believed that a vegetarian diet does not provide adequate nutrients. It should be noted that the total number of responses for this question was 75.3% (n=128).

However, 35% (n=45) believed that vegetarianism was a positive dietary option and that a balanced diet can be achieved through vegetarianism. Respondents also perceived that a vegetarian diet consists of healthier and more natural foods and is devoid of chemicals found in meat.

Question number two asked participants "why do you think males or females are more likely to be vegetarian?" The majority of respondents believed females were more prone to a vegetarian diet because of the concept "body image." According to the survey, 57.4% (n=27) respondents indicated that females are more prone to vegetarian diets because of body image pressure. A large majority stated, "Females are more health conscious" or "Media plays a major role in pressuring women into the typical appearance." It is important to consider that a very small sample of 27.6% (n=47) responded to this question and, therefore, may not be representative of the entire sample population.

Question number three asked participants "if they believed a vegetarian diet is nutritionally adequate for athletes competing at a collegiate level?" Two themes emerged from this question which were: (1) misconceptions and (2) balance. Once again misconceptions about a vegetarian diet was a prevalent theme regarding protein, iron, and nutrient concerns. According to the survey, 53.1% (n=76) stated a variety of misconceptions concerning a vegetarian diet. On the other hand, 31.4% (n=45), stated that a vegetarian diet is an adequate diet for a collegiate athlete because they are able to obtain the same nutrients as a non-vegetarian diet. In addition, these respondents reiterated the importance of consuming a balanced diet with all the necessary nutrients.

This question had a high response rate of 84.1% (n=143) of athletes who answered this question.

Question four asked the participants "why they would or would not consider a vegetarian diet with substantial evidence supporting the diet." There was one major theme for this question and that was the enjoyment of meat. According to the survey, 63.1% (n=89) of respondents indicated that they had never considered a vegetarian diet simply because they enjoy eating a meat-based diet. Only 12.1% (n=17) stated that they would consider a vegetarian diet if substantial evidence supporting it was provided. It is important to note that this question had a high response rate of 82.9% (n=141).

The fifth question asked participants "why they believed certain sports would have a larger vegetarian population?" This question was not used because there were too many missing cases. Less than 15% (n<26) of respondents answered this question and therefore was not a valid representation of the sample.

Table 1

Participant Response Rate - Survey

Category	Frequency
Age	Mean = 20.71 (SD = 2.05)
Male	93 (54.7%)
Female	77 (45.3%)
Freshmen	40 (23.5%)
Sophomore	40 (23.5%)
Junior	38 (22.4%)
Senior	52 (30.6%)
Vegetarians	5 (2.9%)
Non-Vegetarian	164 (96.5%)
Men's Football	57 (33.5%)
Men's Basketball	3 (1.8%)
Women's Basketball	5 (2.9%)
Men's Track and Field	26 (15.3%)
Women's Track and Field	24 (14.1%)

Women's Volleyball	7 (4.1%)
Women's Soccer	6 (3.5%)
Men's Tennis	1 (.6%)
Women's Cross Country	8 (4.7%)
Men's Cross Country	4 (2.4%)
Women's Softball	7 (4.1%)
Women's Golf	1 (.6%)
Co-Ed Cheerleading	21 (12.4%)

Vegetarian Interview Results

A total of four student-athletes who self-identified as vegetarian were interviewed. Of these four student-athletes, two were female and two were male. The sports athletes were involved in were cheerleading and football. Three out of the four vegetarians were from out of state and only one of those three were from the northwest region of the United States. After the interviews were transcribed and analyzed, three major themes were identified: (1) Motivation, (2) Social Stereotypes, and (3) Practicality.

Motivation

During the interviews, participants were asked what originally motivated them to become vegetarian. Two major sub-themes of *Motivation* emerged among participants: (1) extrinsic motivation and (2) intrinsic motivation. The four vegetarians all experienced both intrinsic and extrinsic motivation. Intrinsic motivation refers to the idea that we perform certain activates or do certain things because it gives us inherent satisfaction or pleasure (Coon & Mitterer, 2010). Extrinsic motivation refers to the idea that we perform certain activities or do certain things for a known reward that can be tangible or psychosocial (Deci & Ryan, 2008).

Extrinsic Motivation. For all four vegetarians, some form of extrinsic motivation occurred that had an influence on their dietary change. For two of the

vegetarians, Seth and Maximus, extrinsic motivation came in the form of significant others. For Seth, it came from a close family member who played a vital role while growing up, his mother. He said, ",…my mom is vegetarian and has been for about 10 years". For Maximus, it came from a girlfriend who was a long time vegetarian:

Okay well it's a funny story because it started out on a bet on a football game. I think it was the first round of the playoffs. It started out because my girlfriend is vegetarian so the bet was if they lose I will be vegetarian for two weeks, but if they won she would be vegan for two weeks. I ended up losing the bet so I tried it out.

Both Seth and Maximus had extrinsic motivation from significant others who influenced their dietary habits. In addition, Maximus noted the importance of having successful vegetarian athletes as role models:

Then I started looking up a lot of successful vegetarian athletes. You got Arian Foster, Ricky Williams, Tony Gonzalez, and Carl Lewis, who is an Olympic gold medalist. So after that I decided I could do it and I liked it too so it wasn't like I was forcing myself to do it.

Two female participants, Ashlyn and Missy, both had extrinsic motivation in the form of media and images. For Ashlyn, it occurred her freshmen year of college when a professor showed a video in class that was voluntary to watch. She said, "I watched the movie *Food Inc*. in one of my classes which got me thinking about it a lot more." For Missy, it occurred while browsing the internet researching the process of meat distribution: "There was one day I was viewing images of what occurs in a typical slaughter house or meat factory and they just disturbed me. I didn't really have any

desire to eat meat after that." Both Missy and Ashlyn acknowledged the fact that their original desire to become vegetarian was for ethical reasons concerning animal cruelty.

Intrinsic Motivation. Two of the vegetarians indicated they conducted more research after their initial motivation from extrinsic factors. In addition to ethical reasons, Missy conducted more research and found more intrinsic reasons to pursue a vegetarian diet. She indicated, "…I have found a lot of different health benefits and aspects of being a vegetarian. So those have been added to my list of reasons as well." Missy was a vegetarian for about four years before deciding to become vegan. Once Ashlyn learned more about a vegetarian diet, this knowledge amplified her original motivation. She said, "Once I learned more about it I felt like it was something I had to do long term."

Social Stereotypes

The theme *Social Stereotypes* emerged during interviews. This discussion included any negative perceptions participants had encountered or any awkward situations and judgments they experienced. Two major sub-themes emerged among participants: (1) misconceptions and (2) withholding judgment.

Misconceptions. Three of the four vegetarians indicated that they have dealt with non-vegetarian misconceptions about nutrients in their diet, specifically protein. Ashlyn described how she constantly felt on the defense of her diet when she said, "I feel like you constantly have to explain your choices or your reasoning behind it and answer the question about how do you get enough protein and where do you get enough protein from." Similarly, Maximus had the same concerns and experienced the social stereotypes regarding this misconception once his dietary habits changed, "I just found out a lot of

common misconceptions that people have and some that I had, like where protein comes from and how there is many other sources of protein." On the other hand, Seth used his mother, who is a vegetarian, as an example that proved the misconceptions wrong:

> The misconceptions of not having enough protein and all that is not true. I can definitely see she [his mother] has more energy and she runs in the morning and lives a pretty healthy lifestyle.

In addition to the misconceptions about protein, another social stereotype emerged, which was gendering of food. Three of the four vegetarians experience stereotypes related to food gendering by non-vegetarians. Maximus described that while he was explaining his reasoning for becoming vegetarian, one of his friends expressed his dismay: "After that he responded by calling me a girl. People associate manliness with meat and so I got a lot of that from my friends." Missy expressed her opinion on how strength and masculinity is valued in an athletic based community:

> Since you are not consuming animal based protein that's usually associated with masculinity and strength and so a lot of people think that without those animal based proteins it's difficult to achieve the strength and masculinity that is valued in an athletic based community. In addition, Missy continued on to say that, "You deal with a lot of people expecting you to be weak, skinny, and more feminine."

Withholding judgment. Another common theme among vegetarian participants was how they explained their dietary choices in a social setting. In this context, these participants were apologetic to the people they converse with while explaining their dietary habits and withheld judgment towards them for eating meat. Three of the four vegetarians referenced this concept during their interviews. Both Missy and Ashlyn

stated that they have eaten something knowing it was not vegetarian because they felt guilty that it was made especially for them. However, Missy did state that she would sometimes eat nothing at all:

> I will have a taste of something that someone made that was really special. Sometimes I will just not eat anything at all and wish that I could. The reasons why I do that is just because it is my choice and is not anyone else's choice of my diet and I don't want to make other people feel uncomfortable because I have chosen to do a diet that is not typical of the majority.

Ashlyn stated similar feelings when special foods are made for her:

> I feel like I try to explain it without sounding judgmental of their choices. This is just my personal choice and this is the way I eat because I like it and you don't have to like it. And I am like you went through this much trouble to make food that I can't eat and I have a really hard time saying no. So I end up eating it because they went through that much effort.

While Maximus stated that he was honest with friends or family that he would not eat food that is not vegetarian, he did indicate that he withholds judgment against those who are non-vegetarians, "Some people are just judging you because you don't eat meat, but I am not judging them because they don't eat meat." It appeared to be a common theme for vegetarians to clearly state that communicating their choice to be a vegetarian was carefully balanced with not judging others for their food choices.

Practicality

Practicality emerged as a theme that represented all four vegetarians' perceptions of their own diet and the benefits they experience. It illustrated the knowledge they had

about vegetarianism and the many aspects of how it impacted their lives. Four major sub-themes emerged among participants: (1) perceived health benefits, (2) food preparation, (3) lack of knowledge, and (4) environment.

Perceived Health Benefits. All four vegetarians described their own experiences with perceived health benefits. Ashlyn first stated that a vegetarian diet made her more aware of her diet when she said, "I feel like overall eating a vegetarian diet makes me more aware of what I eat so I try and eat things that are better for my body, which would enhance my performance". In addition, she stated her reasons for abstaining from meat and why she felt it was healthy:

> I know there are a lot of added hormones in meat, especially chicken, to make them have such enlarged breasts and even that can transfer into eggs. Also, eating a lot of red meat is associated with heart disease and all the stuff.

Both Maximus and Seth felt more energetic, "healthier," and "cleaner". Maximus stated during his interview, "I could tell after two weeks I felt cleaner and healthier." He continued to elaborate on this feeling later in the interview:

> I feel like my stamina has increased for sure. I also feel like I have more energy. I use to take a lot of naps, where now I do not take any naps. My strength has also increased and I have gone down in body fat.

Seth expressed similar feelings, "Energy, just more energy throughout the day. I feel more energetic and just healthier overall." Missy indicated that eating a vegetarian diet made her feel as if she had "clean energy":

> I feel that there are certain times where I do not feel as heavy or sluggish as some of my fellow athletes after they eat certain meals with meat and dairy in them.

When I am eating a meal heavy in fruits and vegetables I feel like I have more clean energy and therefore not bogged down by high fatty meals or things like that.

Missy continued by describing the perceived health benefits regarding recovery and staying healthy:

> Then there are also some side effects of being a vegan, in that when you consume less milk the likely hood of having asthma or common cold symptoms is reduced as well. Also, there is just an overall feeling of clean energy due to all of the hopefully anti-oxidants you are consuming instead of meat. I also feel that if I do have an injury it repairs itself quickly because of all the anti-oxidants I am consuming through plants.

All four vegetarians stated that they felt healthier overall and had cleaner energy as a perceived health benefit.

Food Preparation. Both Maximus and Missy indicated that food preparation played a role in any healthy diet. Missy stated:

> Also, I think eating healthy, whether eating vegan diet or non-vegan diet is just in perspective and all require time. It takes time to prep any food you are going to cook yourself. So I don't think there is a barrier with time constraint because there are quick things you can eat with any diet you choose. I think it is just perspective.

Maximus believed that a non-vegetarian may be more time consuming when prepping food compared to a vegetarian diet:

> I feel like it is harder to prepare and cook meat. Even meat substitutes are easier and cook faster than meat. As much as society has adapted to vegetarianism and

> see more vegetarian options in restaurants, I do not think it is very hard. I think it is harder to prepare eat meat actually.

Lack of Knowledge. During the interviews with the four vegetarians, there was an overall sense of lack of specific knowledge concerning vegetarianism. When asked about health effects or deficiencies, three of the four responded without identify any specific health effects or deficiencies. One individual stated, "I have heard that is harder to get Vitamin B12, but I haven't experienced any issue with it being vegan, but I am sure there is other ways to get it." When Seth was asked about any positive or negative health effects of a vegetarian diet, responded "Not really. Unless you crave meat every once in a while." Maximus indicated that he supplemented with vitamin B12, "Also, I usually take Vitamin B12 daily." Vitamin B12 seemed to be a common possible deficiency known by all four vegetarians, however three of the four did not indicate any other specific health effects whether that be positive or negative.

Environment. Both Seth and Ashlyn indicated the role the environment played on their dietary intake. Seth indicated that most time will be spent preparing his own food due to the environment, "Especially, a place like here you are not going to be eating out a lot. So yeah, it is time consuming preparing your own food". Ashlyn stated that environment and culture influences the acceptance and vegetarian possibilities when eating out:

> I feel like it depends on where you are from cause certain places it is really easy. I Notice it the most when I have to go out to eat and then I have to change my order so much because I can't just be like ohh I want this thing without this, without this, without this and can you add this.

Non-vegetarian Interview Results

The six non-vegetarians represented the following sports: Football, Women's Track and Field, Women's Soccer, Women's Softball, and Co-ed Cheerleading. Interestingly, all three female participants were from out of state, whereas all three male participants were from in state. Only one of the female participants was from the northwest region of the United States. After the interviews were transcribed and analyzed, three major themes were identified: (1) social stereotypes, (2) health impact, and (3) practicality.

Social Stereotypes

The social stereotype theme emerged during interviews with non-vegetarians and represented the perceptions these participants had towards vegetarians and their environment. Two major sub-themes emerged among participants: (1) cultural norms and (2) judging.

Cultural Norms. Two non-vegetarians interviewed indicated that cultural norms experienced while growing up impacted their perceptions of their own diet. One individual, Blake, stated that the area in which he grew up was a "meat and potatoes" culture and politics plays a major role in the rejection of vegetarianism:

> Vegetarians have a negative stigma in this area because this area is a meat and potatoes kind of place. You raise the animals, buy it from the store, and eat it. Not I only eat salads. It is a culture clash coming into play where the more conservative ideas of [Name of Area] of we cooked this, you will eat it. We raised this animal and killed it, it is for us. That is clashing with the more liberal ideas of we need to start conserving the animal populations and is it a humane way of

> putting down the animals or even is it humane to even eat animals. People from a more liberal background are more likely to or tend to stray towards vegetarianism. Whereas the more conservative background eat meat.

Blake also discussed how the hunting culture impacted his perceptions:

> I have seen the process and know exactly what goes into it and am not freaked out by that. Probably has to do a lot with the culture I grew up around. I grew up hunting and have shot a deer, a few birds, and I fish. I just enjoy the taste of meat and enjoy hunting. I grew up around here and hunting is…I got taught from a really young age that hunting is good. Free meat! But some people don't like killing animals for food and I am okay with that.

Another individual, Kacie, stated that her family molded her perceptions as well, "I have a lot of farmers in my family. So I think they would disown me if I considered a vegetarian diet". Both individuals stated that the environment they grew up in helped shape their perceptions towards vegetarianism and animals.

Judging. Five out of the six participants indicated some sort of judgment towards vegetarian athletes in their interview. Barry indicated that his judgment toward a vegetarian athlete would purely be performance based when he said, "I don't really care. They can choose whatever they want to do as long as they are getting the proper nutrition to excel on the field." Kate indicated feeling sympathy for vegetarians because she felt like they were "missing out." She continued "Honestly I think I would feel bad for them because I love meat so I would feel like they are missing out by not eating meat." Three other individuals indicated that they do feel there is a negative stigma for a vegetarian

athlete. Derek indicated that he did not know much about vegetarianism at first, which caused his judgment:

> At first I didn't really know anything about it. So I always judged like that's a bad thing. I do know people that think it is totally wrong and they shouldn't as an athlete. Some believe it is totally bad for the body.

Gemini also indicated similar perceptions by athletes:

> Generally I think people would question that and being a collegiate athlete. It's just not very common, but I do think it is becoming more common honestly, but generally it is just not as common. So people here would be like why would you do that? Being an athlete is already hard enough on your body and then you are not getting…like I said not sufficient nutrient. But yeah I don't have a negative outtake on it, but I have been a vegetarian. However, I think generally yeah there is a negative stigma about it.

Another participant, Kacie, indicated that she agreed there is definitely a negative stigma for vegetarian athletes: "I feel like there is that stigma of vegetarians having a harder time getting protein and do not perform as well."

Health Impact

Health impact emerged during interviews and represents the non-vegetarians perceptions of a vegetarian diet and the effect it has on their health. Also, it represents the concerns non-vegetarians perceived for vegetarian athletes. Two major sub-themes emerged from participants: (1) concern, and (2) perceived health deficiencies.

Concern. Five of the six non-vegetarian participants indicated why a vegetarian diet would not work for an athlete. Of those five, two specifically indicated concerns about strength gains. Two female participants, Gemini and Kate, worried about strength

gains on a vegetarian diet. Kate implied that a vegetarian diet may decrease her strength performance in the winter, "During the winter it might affect me more because we are doing a lot of power lifting and building and I feel like my strength would decrease on a vegetarian diet." Gemini stated similar worries when she said, "I just think I would get worse. I think my energy levels would go down and I would not build as much muscle." Other concerns for participants were time and resources. Kacie believed it is not an adequate diet due to lack of resources as a college student, "For college athletes, no it is not an adequate diet. Well like if you don't have the resources it is not." Gemini simply stated time constraints in addition to her previous concerns of strength, "It definitely takes more time." Barry also indicated that time is an important factor, "If your time doesn't now allow it then it's probably an inadequate source." Similarly, Blake indicated time constraints in relation to planning an adequate vegetarian diet:

> It would take more advanced planning and to be more prepared. It is just more difficult to make it nutritious and to make it portable. It is very difficult, especially for a college athlete because our intake has to be much higher than everyone else's. Steak, chicken, and pork is a great way to get a lot of protein. A vegetarian diet just takes a lot more thought and effort than it does to just, oh hey look this looks tasty, let's eat that.

Overall, five of the six participants indicated concerns about consuming a vegetarian diet while being a competitive athlete.

Perceived Health Deficiencies. Four of the six participants indicated their concern about protein deficiency on a vegetarian diet. Blake stated it would simply be harder to get all the protein needed: "It is harder to get iron and protein on that type of

diet. You would have to eat a lot of beans with that diet." Kate indicated similar feelings, "I have a hard time thinking it is healthy for athletes because we need that extra protein for certain stuff". Gemini stated the importance of meat and what nutritional value it brings:

I just think there are just too many beneficial things that come from meat, ya know? As far as vitamins, nutrients, and the protein base in meat is way higher than anything else. So, like I said you can get adequate protein from nuts, beans, and rice, but it's just not going to ever meet the standard of what meat can give you. Barry stated the concerns he already had with protein while not being on a vegetarian diet:

> It's hard for me to get all the proteins I need anyway because of my schedule even with eating meat. I could imagine how much harder it would be to have to do the extra step of trying to find all the proteins for a vegetarian diet.

Participants were specific in their concern of a potential protein deficiency that they felt would affect their performance.

Practicality

Practicality emerged during interviews and represents non-vegetarians perceptions of time constraints or issues regarding a healthy diet or vegetarian diet. In addition, this theme describes the overall knowledge of non-vegetarians regarding vegetarianism. Two major sub-themes emerged from participants: (1) food preparation and (2) lack of knowledge.

Food Preparation. Two participants indicated the importance and time consuming nature of food preparation. Derek stated any healthy diet will take time:

It is the meal prepping that takes the most time. I fell like any diet is time consuming if you do it correctly. So I wouldn't say a vegetarian diet is harder with a busy schedule. Eating healthy takes time in preparing your own food. Kate also indicated that food preparation on any diet takes effort:

It does come down to preparing your own food. I definitely learned that my freshmen year. Food is just not there, you actually have to put in effort to make it for yourself. So I think it would come down to the effort you put in. I don't know think it would be harder or easier, preparing food for any diet takes time.

Lack of Knowledge. Five out of the six participants displayed a general lack of knowledge on the subject of vegetarianism in regards to positive or negative health effects. Derek simply stated he did not know any specific health effects of a vegetarian diet, "No, I cannot say I know any positive or negative health effects of a vegetarian diet". Similarly, Barry indicated the same in his interview, "No. No I am not aware of any health effects of a vegetarian diet". Kacie stated some deficiencies, but did not provide any specific health deficiencies or any positive health associations commonly associated with vegetarianism:

You are probably more likely to be deficient in certain vitamins and minerals which can affect your health in the long term. But as for specifics, not really. I think it's probably harder to get all the nutrients that you need.

Gemini indicated the same lack of knowledge with regards to specific knowledge:

Ummm, I am surprised that there is not that many negative ones. I know that you can typically get all the proper nutrition groups in on a vegetarian diet as far as

protein goes and like nutrients and vegetables, but like positive benefits I don't know much about that.

Another participant, Kate, had only knowledge through other individuals, "Yea I have only just heard that it is healthy." Overall, there was a lack of knowledge in specific details concerning a vegetarian diet and the potential negative and/or positive health effects.

Conclusion

Overall, the survey indicated that there were several misconceptions such as protein and iron concerns and the indication that meat is healthy for athletes. The responses indicated that the majority of respondents believed that a vegetarian diet does not provide adequate nutrients and is not an adequate diet for a collegiate athlete. Another theme that emerged was the enjoyment of meat. The survey results leaned towards a negative perception towards vegetarianism.

Interviews of non-vegetarians displayed similar results to that of the survey. Although the non-vegetarians who were interviewed did not personally have a negative stigma towards vegetarian athletes, they did believe the institution did. However, four out of six non-vegetarians indicated a concern about protein requirements and how it could be difficult to get on a vegetarian diet. This could imply that they do in fact have a negative stigma towards a vegetarian diet, however, would not admit it face-to-face in an interview. Overall, there was a major lack of knowledge in every aspect for both vegetarians and non-vegetarians. Only one vegetarian, Missy, knew specific health benefits and deficiencies associated with a vegetarian diet. Other than Missy, the lack of knowledge was very common among all participants interviewed.

Chapter V

Discussion

The purpose of this study was two-fold: (1) to investigate the prevalence of vegetarianism among college athletes at a public university in the northwest region of the United States, and (2) to investigate the perceptions vegetarians athletes hold at this institution about vegetarianism. This study aimed to fill a knowledge gap concerning the prevalence and perceptions of vegetarian athletes a highly conservative area where vegetarianism is believed to be uncommon (Ruby, 2012). In this section, I will discuss the five research questions that pertain to this study:

1. How prevalent is vegetarianism among college athletes at this institution?
2. What are the motivations behind an athlete's decision to become vegetarian?
3. Are athletes aware of any deficiencies in a vegetarian diet?
4. Are athletes aware of positive health effects with a vegetarian diet?
5. Do non-vegetarian athletes have a negative stigma about a vegetarian diet at this institution?

In addition, I discuss the limitations, application of research, and recommendations for future research.

Prevalence

My first research question was to determine how prevalent vegetarianism was among college athletes at a specific institution in the northwest region of the United States. To answer this question, survey participants were asked if they self-identified as

vegetarian. The results of the survey were similar to the general population (Ruby, 2012). In this study, five participants indicated that they self-identified as a vegetarian. However, only four vegetarians were interviewed because the fifth could not be found. The prevalence of vegetarianism among athletes at this institution was 3%. Therefore, prevalence among athletes at this institution was the same prevalence as in the general population of 3% according to Ruby (2012). It should be noted that only 170 participants responded to the survey out of 311 participants. Therefore, the prevalence could be higher, however, the sample of 170 was similar to the prevalence in the general population.

Motivation

For my second research question, I investigated an athlete's motivation to become vegetarian. Conducting interviews with self-identified vegetarians provided me an in depth understanding of the original motivations for these four participants. There were two kinds of motivation that occurred for the four participants who self-identified as vegetarian: (1) extrinsic motivation (2) intrinsic motivation. However, all four individuals experienced some form of extrinsic motivation. Extrinsic motivation refers to the idea that motivation comes from outside an individual (Deci & Ryan, 2008). The individual is driven by factors external to him or her such as a tangible reward (Deci & Ryan, 2008). All four individuals experienced extrinsic motivation as their primary motivation for becoming vegetarian. There were two specific categories: (1) significant others and (2) social media and images. Two of the individuals were influenced by significant others such as their mother or girlfriend. This could be expected because individuals who are close to us and who we care about have the ability to influence some

of our decision making and choices. The other two individuals were influenced by images they had seen while researching and learning about the process of meat distribution. This supports current literature that refers to ethical concerns about raising and slaughtering animals as the top reason for motivation to become vegetarian (Fox & Ward, 2008). It could be assumed that these individuals did not grow up in a "farming" culture or family, where their family's income or main source of income came from farming or raising animals. This would make them more susceptible to the images typically seen in the meat distribution process.

Intrinsic motivation refers to the idea that behavior is driven by internal rewards (Coon & Mitterer, 2010). The vegetarian participants in this study were also intrinsically motivated. This is consistent with the idea that vegetarian's decision to become and to stay vegetarian are dynamic and continually changing (Ruby, 2012). In study conducted in the United Kingdom, 74% of participants had stated a change in motive (Hamilton, 2006). Personal health concern is one of the top motivations in addition to animal ethics (Fox & Ward, 2008; Ruby, 2012). This finding supports that notion because many participants adapted intrinsic motivation such as personal health concerns and perceived health benefit of feeling "cleaner" and "healthier". This results of this study supported previous literature stating that the top motivations were ethical concerns and personal health concerns.

Perceived Health Deficiencies

My third research question investigated if athletes were aware of any deficiencies in a vegetarian diet. In the survey, I asked participants' personal opinions regarding how a vegetarian diet would impact their health. As a result, 33.1% believed that a vegetarian

diet would have a negative impact on their general health. It is important to note that on the same question, 40.6% of participants stated they were neutral. This could be an indication of the lack of knowledge participants have towards a vegetarian diet. This appears to be prevalent in the interviews as well. In general, after interviews were conducted, there was a general lack of knowledge from all participants concerning vegetarianism except in one specific case. Nine participants could not give specific examples of perceived health deficiencies or perceived health benefits other than protein concerns and an overall healthier feeling. Protein drew the most criticism from all non-vegetarian participants. In addition, Fuhrman and Ferreri (2010) indicated the disparity between the actual intake requirements of protein and stated that it is inflated. In addition, a balanced vegetarian diet can provide the necessary nutrients to be a successful athlete (Fuhrman & Ferreri, 2010). Non-vegetarian participants indicated a concern or perceived health deficiency in protein. Four of the participants indicated how difficult it would be for an individual to obtain the necessary amount of protein on a vegetarian diet. Participants also stated that it was already difficult to receive enough protein and nutrients through a regular diet as a college student. However, none of the vegetarian participants believed they had a protein deficiency. Also similar to Fuhrman and Ferreri (2010), they stated a proper balanced vegetarian diet does not need additional protein supplementation. All four vegetarians indicated they believe they receive an adequate amount of nutrients and protein from the diet they consume. However, two of the vegetarians specifically indicated a concern for vitamin B-12 deficiency. All vegetarians are susceptible to vitamin B-12 according to Pawlak et al. (2013). Vitamin B-12 is an essential part of everyone's diet because it is a key component in DNA synthesis and a

key factor in the maintenance and repair of neural axons (Pawlak et al., 2013). Therefore, it is important for all vegetarians to be aware of the possible deficiency. However, only 50% (n=2) of vegetarians in this study specifically mentioned the possibility of vitamin B-12 deficiency. The lack of knowledge could be due to an overall lack of research in this topic concerning vegetarianism and athletes (Ruby, 2012).

Perceived Health Benefits

The fourth research question investigated if athletes were aware of any health benefits associated with a vegetarian diet. In the survey administered to all participants, I asked their personal opinion about how a vegetarian diet would impact their health. As a result, only 26% of participants believed that a vegetarian diet would have a positive impact on their general health. Again, it is important to indicate that 40.6% of participants stated they were neutral. This could be an indication of the lack of knowledge among participants concerning a vegetarian diet. This lack of knowledge appeared in the interviews conducted with the four vegetarians as well. Three of the four vegetarians did not state specific perceived health benefits other than an overall "healthier" or "cleaner" feeling. One vegetarian went into great detail and depth about her perceived health benefits of a vegetarian diet that were in line with current literature. One vegetarian stated that a proper and balanced vegetarian diet can reduce the risk of CHD, colon cancer, and helps deter obesity. A proper and balanced vegetarian diet can reduced CHD by 32%, which is mostly due to the consumption of LDL cholesterol (Clifton & Tapsell, 2013; Fraser, 2009). In addition, a vegetarian diet has been associated with a reduction in ovarian and colon cancer due to the consumption of cruciferous vegetables, fruits, and legumes (Craig, 2009; Kiani et al., 2006' Singh &

Fraser, 1998). In addition, there were no specific perceived health benefits stated by any non-vegetarian participants during the interviews. In general, there was a lack of knowledge about the health benefits of a vegetarian diet. Once again this could be due to the lack of research done on vegetarianism and athletes according to Ruby (2012).

Vegetarian Stigma

For my fifth research question, I wanted to find out if non-vegetarians athletes had a negative stigma towards vegetarian athletes at this institution. In the survey, three questions were asked to gauge the participants' attitudes. First, the likert scale question (Appendix A) asked participants how a vegetarian diet would impact their sports performance. The average answer from participants indicated a majority felt that there performance would slightly go down while consuming a vegetarian diet. Another question asked participants if they believed a vegetarian diet was an adequate diet for collegiate athletes. As a result, 64.6% of participants did not believe a vegetarian diet was an adequate diet for collegiate athletes. In addition, over half the participants indicated that they would not consider a vegetarian diet despite substantial evidence supporting it. Many of the participants indicated that they would not consider a vegetarian diet because they simply enjoy meat. The culture these athletes grow up in shape how the think about nutrition. Three of the vegetarians grew up out of state and were not raised in the community in which they attended school, which may have influenced their dietary decisions. Also, their family can shape their perceptions about meat as well (cite). In the athletic community, meat is major component to any diet to gain strength or speed (cite). Meat is believed to be a symbol masculinity, which has been socially constructed as a concept known as gendering of foods (Sobal, 2005). In

addition, during World War I meat was consistently sent to male combatants (as opposed to being provided to non-military civilians) because it was thought that soldiers needed the extra nutrients from meat (Ruby & Heine, 2011). This study supports this notion that many participants believe that meat provides extra nutrients that are essential to an athlete's performance. From the survey alone, there appeared to be a negative stigma towards vegetarianism.

The interviews exposed similar feelings from participants. None of the non-vegetarian participants indicated personally judging or having a negative stigma towards vegetarian athletes. However, all of these individuals believed that there was a negative stigma at the institution towards vegetarian athletes. This could be due to interviewer bias or because they did not want to appear judgmental face-to-face. Throughout the interviews, all non-vegetarians responses implied a negative stigma towards vegetarianism. It was also interesting to find that all vegetarians interviewed were concerned about making others feel comfortable with their decision to eat vegetarian and portraying the idea that it was a personal choice instead of judging others for eating meat. According to Romo and Donovan-Kicken (2012), 75% of vegetarian participants in their study wanted to talk about vegetarianism without judging others for eating meat. The dilemma was how to talk about vegetarianism and their lifestyle without implying that eating meat is immoral (Romo & Donovan-Kicken, 2012). This occurred in all four interviews with vegetarians as they were concerned when talking to others to not judge them for their eating habits. This supports Romo and Donovan-Kicken's (2012) research on communication dilemmas for vegetarians. In addition, another concept of performance based judgment emerged. Three non-vegetarian participants stated that they

would only have a negative stigma towards vegetarian athletes if they did not perform well in their sport. In other words, their performance dictated how they judged the adequacy of their diet. If they are able to perform well and succeed in their sport then a vegetarian diet would be deemed adequate for them personally. However, they still did not believe that a vegetarian diet would be adequate for them despite a teammate's success while consuming a vegetarian diet. Therefore, they ultimately view a vegetarian diet as inferior to a non-vegetarian diet because regardless of performance or facts they are opposed to a vegetarian diet.

According to Romo and Donovan-Kicken (2012), another major communication dilemma for vegetarians is "wanting to be true to one's self yet wanting to fit in" (p.410). This emerged in all four interviews as they all wanted to fit in and not be treated differently. However, because vegetarianism clashes with mainstream beliefs, it is often stigmatized in a negative manner (Romo & Donovan-Kicken, 2012). My study supports previous literature that vegetarianism is stigmatized due to the clash of mainstream beliefs.

Resources

During interviews, the sub-theme resources was very prominent. Resources were defined in terms of time, money, cost, and institutional support. All of these resources arose as possible barriers for why a vegetarian diet is not feasible. Non-vegetarians often stated that on a college budget, a vegetarian diet is not plausible. A vegetarian diet is centered on fresh food, which perishes more quickly than food that can be frozen. This ultimately shrinks the time frame an individual has to make and prepare their food.

Whereas a typical non-vegetarian diet includes more frozen food options, especially meat, which can increase the window span to prepare these foods.

The type of vegetarian diet and the level of seriousness a person is about their vegetarian lifestyle can impact how often they buyfood. Buying frozen vegetables does diminish the nutritional value when you compare it to fresh vegetables (cit). However, it does allow a longer window to cook and prepare these foods. Time required to prepare food was a re-occurring theme during interviews and there were mixed opinions. Some believed a vegetarian diet was much more time consuming; whereas some believed that any healthy diet takes time because of food preparation. However, their perceptions about the time they have to make this food can be due to the food's time limit or how long it stays fresh. Meat that can be frozen for long periods of time can be prepared at any moment in the next few weeks, whereas fresh vegetables only have a few days to a week to be eaten.

Another resource to be considered is institutional support. How a college or university can provide food options, counseling, or any other resources that can support a vegetarian is critical for the feasibility of this diet for a college athlete. A coach's support of a vegetarian diet is also important. Athletic departments providing meals for such a minority would be difficult, however it should be provided. However, most athletic departments already provide nutritional support to athletes and would not be an inconvenience to cover an additional topic like vegetarianism.

Environment

Environment and the culture we grow up in shape are initial perceptions of society. In my study, three out of the four vegetarians were from "urban" areas. Only

one individual was from a "rural" area. Rural area implies that the main source of income is agriculture or farming (cite). Urban areas represent those cities with more dense population as you would see in a city like Los Angeles. According to Ruby (2012), one would expect rural areas, or areas where agriculture is a major source of income, to have few vegetarians. In addition, these areas are typically highly conservative, which is not conducive to a vegetarian lifestyle (Ruby, 2012). Three of the vegetarians grew up in an area where the main source of income or revenue was not from agriculture. They did not grow up hunting or around farms where they were accustomed to killing animals. This had a major impact on these individuals because they were shocked once they saw the process through images and media. Even the one vegetarian from in state was shocked at the images and obviously did not grow up hunting or around farms. All four of the vegetarian's experienced extrinsic motivation and adapted animal morality as one of their motivations for become vegetarian. According to Fox and Ward (2008), animal morality and person health are the top two motivations for become vegetarian.

Limitations

One limitation in this study was my role as a researcher. I have been vegan for a little over a year and found it important to research vegetarianism extensively. Therefore, my bias could be represented in this paper. However, I used several triangulation and bias control methods to conduct my research, analyze my data, and present my results. A second limitation is that the research conducted in this study cannot be generalized to all student athletes for multiple reasons. First, the sample size in this study was very small compared to the population of all college student athletes and, therefore, is not representative of the entire population. In addition, this study followed a mixed methods

approach that included a qualitative and exploratory portion; therefore this study could not claim to be generalizable to the entire college student athlete population. A final limitation was the sampling method used. I used a sample of convenience for the survey portion of this study and purposeful sampling for the qualitative part of this study. There are limitations to a convenience sampling because participants were selected for convenience or ease of access. Participants were not randomly selected which does not allow the results of the data to be generalizable to the entire population. Purposive sampling is a technique used when a researcher is looking for a specific set of characteristics in a population (Baumgartner & Hensley, 2013). It is not generalizable because participants are not randomly selected (Baumgartner & Hensley, 2013).

Application of the Research

The application of this research can be used in future studies concerning vegetarianism and athletes as there is not much literature pertaining to vegetarianism and athletes and/or the perceptions they have. My study indicated that athletes may be susceptible to the same judgment towards vegetarians as the general population. Many athletes are health conscious and are concerned about nutrients they consume. One overall theme that occurred in my study was the lack of knowledge. Lack of knowledge was prevalent among both non-vegetarians and vegetarians. Implementing education about vegetarianism as it becomes more popular could be an important concept moving forward. Since eating a balanced and proper vegetarian diet can be difficult, it is important for those individuals who are interested in becoming vegetarian to have a knowledge base about this type of diet. In addition, education could lend support to non-

vegetarians to understand what kind of social tension and stigma a vegetarian athlete is exposed to.

Recommendations for Future Research

For future research, I would recommend conducting a study with a larger sample size. I would recommend conducting a large scale study with all Division I programs. In addition, future studies should utilize a random sampling technique and not one of convenience. Future studies do not need to include all Division I programs, but should randomly select programs to use as participants to increase the strength of the study. These two factors of sample size and sampling technique did not allow me to generalize any of the results or data to the entire population. In future studies, it should be important to take note of where these individuals were raised or grew up. The results of this study suggest that culture and the environment in which individuals were raised played a role in how they viewed vegetarianism as a whole. In addition, I would recommend a similar study at an "Urban" institution or one that is located in an urban city. Also, future studies should include the coach's perceptions of the players and the impact of vegetarianism on performance. This could play a role in how much institutional support individuals could receive.

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Appendix A

Dietary Perceptions

What is your age? _____

What is your sport? _____

What is your gender? Circle one

Male Female

What is your academic class? Circle one

Freshmen Sophomore Junior Senior

Do you self-identify yourself as a vegetarian? (Barr & Rideout, 2004) Circle one

Yes No

On a scale of 1 to 5, how well do you think you could perform your sport consuming a vegetarian diet? (Ruby, 2011; Romo & Donovan-Kicken, 2004)

1	2	3	4	5
Very poorly	Poorly	Neutral (Same)	Improved	Much improved

Do you believe consuming a vegetarian diet has a positive effect on your health? (Frasier, 2009; Clifton & Tapsell, 2013) Circle One

Yes No Undecided

Why or why not?

_____

_____

Do you think males or females are more likely to be vegetarian? (Sobal, 2005)

Males Females

How many vegetarians do you personally know? (Sobal, 2005)

Male: _____ Female: _____

Do you perceive a vegetarian diet as nutritionally adequate for athletes competing at a collegiate level? (Ruby, 2012; Romo & Donovan-Kicken, 2004) Circle One

Yes No

Why or why not?

_____

_____

If vegetarianism were associated with substantial evidence to be an adequate diet for a collegiate athlete, would you consider consuming vegetarian diet? (Ruby, 2012; Romo & Donovan-Kicken) (Circle One)

Yes No

Why or why not?

_____

_____

Do you think athletes in certain sports are more likely to be vegetarians? Circle one

Yes No

If so, circle two sports that you believe would have a larger vegetarian athlete population

(M) Football (M) Basketball (W) Basketball (M) Track and Field (W) Volleyball

(W) Soccer (M) Tennis (W) Cross Country (W) Softball (W) Golf

(W) Tennis (W) Track and Field (M) Cross Country

Appendix B

Interview Guide (Vegetarian)

Demographics

Age

Class standing

Sport

Vegetarianism

How did you become vegetarian? What was the process? (Fox & Ward, 2007)

How long have you been a vegetarian? (Fox & Ward, 2007)

Do you identify as a vegetarian according to the classification table? (Barr & Rideout, 2004)

What were your motivations for becoming vegetarian? Have your motivations changed? (Fox & Ward, 2007; Hamilton, 2005)

Are you aware of any deficiencies associated with a vegetarian diet? (Pawlak et al., 2013) If so, what are these?

Are you aware of any positive health effects associated with a vegetarian diet? (Clifton & Tapsell, 2013; Fraser, 2009) If so, what are these?

Do you feel there is a negative social stigma associated with a vegetarian diet? (Romo & Donovan-Kicken, 2012; Ruby, 2011; Grossman, 2004)

How do you feel your vegetarian diet impacts your sport performance? (Barr & Rideout, 2004)

Can you talk about how you communicate with family and friends regarding your vegetarian habits? (Romo & Donovan-Kicken, 2012)

Do you ever eat foods you normally would not eat to avoid social inquires about your diet? (Romo & Donovan-Kicken, 2012) If so, why?

Appendix C

Interview Guide (Non-Vegetarian)

Demographics

Age

Class standing

Sport

Non-Vegetarian

Are you aware of any friends or family who consume a vegetarian diet? (Romo & Donovan-Kicken, 2012)

What are your perceptions of close friends or family who consume a vegetarian diet? (Romo & Donovan-Kicken, 2012; Ruby, 2011; Grossman, 2004)

Are you aware of any deficiencies associated with a vegetarian diet? (Pawlak et al., 2013) If so, what are these?

Are you aware of any positive health effects associated with a vegetarian diet? (Clifton & Tapsell, 2013; Fraser, 2009) If so, what are these?

What are your thoughts on the nutrition of a vegetarian diet in relation to sports performance with men? What about women? (Barr & Rideout, 2004)

How do you feel a vegetarian diet would impact your sport performance? (Barr & Rideout, 2004) Do you feel you would perform the same, worse, or better?

Appendix D

Idaho State University
Human Subjects Committee
Informed Consent Form for Medical Research

CONSENT TO PARTICIPATE IN RESEARCH
The Prevalence and Perceptions of Vegetarianism among College Athletes

You are asked to participate in a research study conducted by Justin Arias, Bachelor of Arts in Sociology, 4170 Hawthorne Rd. Apt# B110, Chubbuck, Idaho and 818-665-8529, from the Sport Science and Physical Education Department at Idaho State University. You have been asked to participate in this research because you fit the specific criteria for this study, which is student athlete. There will be around 300 participants in this study. Your participation in this study is entirely voluntary. You should read the information below, and ask questions about anything you do not understand, before deciding whether or not to participate.

1. **PURPOSE OF THE STUDY**
The purpose of this study is twofold: (1) to investigate the prevalence of vegetarianism among college athletes at a University in the Northwest region of the United States and (2) to investigate the perceptions of vegetarianism athletes hold at this institution. The information collected from this study can be used to provide a theoretical foundation for future research.

2. **PROCEDURES**
If you volunteer to participate in this study, we would ask you to do the following things:
- Participate in an online survey that will take less than 10 minutes.
- Depending on the results of the survey, you may be selected to participate in a face to face interview that will last approximately 30 minutes.
- You will be asked questions relating to vegetarianism that will include your perceptions, motivations, and dietary habits as it applies to you.
- If selected for a follow-up interview, you will be asked to volunteer a total of 45 minutes of your time for this research.

3. **POTENTIAL RISKS AND DISCOMFORTS**
- There are no foreseeable risks associated with participation in this study

4. **ANTICIPATED BENEFITS TO SUBJECTS**
- You should not expect your condition to improve as a result of participating in this research. You have the right to refuse to participate in this research study.

5. **ANTICIPATED BENEFITS TO SOCIETY**

- The information collected from this study can be used to provide a theoretical foundation for future research.

7. **PAYMENT FOR PARTICIPATION**
   - You will not be paid for participation in this research study and will not be reimbursed for expenses such as parking, bus/taxi fare, or any other expenses relating to travel

13. **PRIVACY AND CONFIDENTIALITY**
   - The only people who will know that you are a research subject are members of the research team. No information about you, or provided by you during the research, will be disclosed to others without your written permission, except (a) if necessary to protect your rights or welfare (for example, if you are injured and need emergency care, or (b) if required by law. When the results of the research are published or discussed in conferences, no information will be included that would reveal your identity. If photographs, videos, or audiotape recordings of you will be used for educational purposes, your identity will be protected or disguised. If you are selected to participate in a follow up interview, you will be assigned a pseudonym to protect your identity. Only members of the research team will have access to research data or personal information.

15. **PARTICIPATION AND WITHDRAWAL**
   - Your participation in this research is VOLUNTARY. If you choose not to participate, that will not affect your relationship with Idaho State University, or your right to health care or other services to which you are otherwise entitled. If you decide to participate, you are free to withdraw your consent and discontinue participation at any time without prejudice to your future at ISU.

17. **WITHDRAWAL OF PARTICIPATION BY THE INVESTIGATOR**
   - The investigator may withdraw you from participating in the research if circumstances arise which warrant doing so. If you experience any of the following side effects such as discomfort with any questions being asked or if you become ill during the research, you may have to drop out, even if you would like to continue. The investigator Justin Arias will make the decision and let you know if it is not possible for you to continue. The decision may be made either to protect your health or your safety, or because it is part of the research plan that people who develop certain conditions may not continue to participate.

18. **NEW FINDINGS**
   - During the course of the study, you will be informed of any significant new findings (either good or bad), such as changes in the risks or benefits resulting from participation in the research or new alternatives to participation, that might cause you to change your mind about continuing in the study. If new information is provided you, your consent to continuing participating in the study will be re-obtained.

19. **IDENTIFICATION OF INVESTIGATORS**

- In the event of a research related injury or if you experience an adverse reaction, please immediately contact one of the investigators listed below. If you have any questions about the research, please feel free to contact Justin Arias at 818-665-8529, 515 S 9th Ave, Pocatello, ID.

20. **RIGHTS OF RESEARCH SUBJECTS**

- 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. If you have any questions regarding your rights as a research subject, you may contact the Human Subjects Committee office at 282-2179 or by writing to the Human Subjects Committee at Idaho State University, Mail Stop 8046, Pocatello, ID 83209.

SIGNATURE OF RESEARCH SUBJECT OR LEGAL REPRESENTATIVE

I have read (or someone has read to me) the information provided above. I have been given an opportunity to ask questions, and all of my questions have been answered to my satisfaction. I have been given a copy of the informed consent form.

BY SIGNING THIS FORM, I WILLINGLY AGREE TO PARTICIPATE IN THE RESEARCH IT DESCRIBES.

_____

Name of Research Subject

_____ _____

Signature of Research Subject Date

Appendix E

Classification of Vegetarian Diets

Type of vegetarian diet	Definition
Semivegetarian	Avoids some meat, typically avoids red meat
Lacto-ovo-vegetarian	Avoids all meat, poultry, and seafood, but includes eggs and dairy products
Ovovegetarian/lactovegetarian	Both avoid all meat, poultry, and seafood. **Ovovegetarians** include eggs but avoid milk and dairy products**.** **Lactovegetarian** include milk and dairy products, but exclude eggs
Vegan	Avoids all animal-derived foods
Macrobiotic	Avoids most animal-derived foods and emphasizes unprocessed organic foods

(Barr & Rideout, 2004)

Appendix F

Email to Athletic Director Jeff Tingey:

Mr. Tingey,

I am in the process of writing my thesis and collecting data to complete my graduate program. The purpose of this study is twofold: (1) to investigate the prevalence of vegetarianism among college athletes at a University in the Northwest region of the United States and (2) to investigate the perceptions of vegetarianism athletes hold at this institution. I am requesting permission to contact and administer a survey to all student-athletes via email or via hardcopy. I am asking permission to have Matt Steuart distribute my survey online via email to all student athletes. Also, if I do not receive enough responses, I am requesting permission to personally contact all coaches to administer surveys via hard copy. I appreciate your time and consideration and please let me know if you have any questions or concerns. If you approve this protocol, please email me at your earliest convenience confirming this

Justin Arias
Department of Sport Science and Physical Education
Candidate for the MPE-AA

Appendix G

Email to Assistant Athletic Director for Academics Matt Steuart:

Mr. Steuart,

I am in the process of writing my thesis and collecting data to complete my graduate program in Athletic Administration. The purpose of this study is twofold: (1) to investigate the prevalence of vegetarianism among college athletes at a University in the Northwest region of the United States and (2) to investigate the perceptions of vegetarianism athletes hold at this institution. I am emailing you to request your help in administering my survey via email to all student athletes. Below I have provided a sample of what I would like it to say to athletes. Thank you for your time and consideration and please let me know if you have any questions or concerns. If you approve this protocol, please email me at your earliest convenience confirming this.

ISU Student Athletes,

I am emailing you on behalf of Justin Arias, who is a current student-athlete at ISU and in the process of writing his thesis. He needs your help to collect data required for his thesis. The purpose of this study is twofold: (1) to investigate the prevalence of vegetarianism among college athletes at a University in the Northwest region of the United States and (2) to investigate the perceptions of vegetarianism athletes hold at this institution. Below this I have provided a link to his survey that will take less than 10 minutes to complete. Participation in this survey is completely voluntary. He thanks you for your participation and help in pursuit of data collection for his thesis.

Justin Arias
Department of Sport Science and Physical Education
Candidate for the MPE-AA

Appendix H

Email to coaches for each sport:

Coach,

My name is Justin Arias and I am currently a student athlete at ISU. I am in the process of writing my thesis and collecting data to complete my graduate program in Athletic Administration. The purpose of this study is twofold: (1) to investigate the prevalence of vegetarianism among college athletes at a University in the Northwest region of the United States and (2) to investigate the perceptions of vegetarianism athletes hold at this institution. I am emailing you to request your help in administering my survey via hard copy to your student athletes. I will provide you with the printed surveys. Thank you for your time and I would appreciate your help in completing my thesis. Please let me know if you have any questions or concerns. If you approve this protocol, please email me at your earliest convenience confirming this.

Justin Arias
Department of Sport Science and Physical Education
Candidate for the MPE-AA

Appendix I

Table 2
Vegetarian Theme Summary

Theme	*Sub-theme*	*Raw Data*
Motivation	Extrinsic	"…my mom is vegetarian and has been for about 10 years" "as far as family, my mom is vegetarian" "…it started out on a bet on a football game…" "When I met her I knew she was vegetarian…" "…I have seen a video of people punching a pig and gauging their eyes out" "There was one day where I was viewing images of what occurs in typical slaughterhouse…"
	Intrinsic	"I have found a lot of different health benefits and aspects of being a vegetarian" "Once I learned more about it I felt like it was something I had to do long term"
Social Stereotypes	Misconceptions	"…and answer the question about how do you get enough protein and where do you get it from" "I just found out a lot of common misconceptions that people have and some that I had…" "The misconceptions of not having enough protein and all that is not true"
	Withholding Judgment	"I don't want to make other people feel uncomfortable because I have chosen to do a diet…" "I feel like I try to explain it without sounding judgmental of their choices" "…but I am not judging them because they don't eat meat"
Practicality	Perceived Health Benefits	"I feel like overall eating a vegetarian diet makes me more aware of what I eat" "…eating a lot of red meat is associated with heart disease and all that stuff" ""I feel like my stamina has increased…" " I feel more energetic and just healthier overall"
	Food Preparation	"…whether eating vegan diet or non-vegan diet is just in perspective and all require time" "I feel like it is harder to prepare and cook meat"
	Lack of Knowledge	"I have heard it is harder to get Vitamin B12…" "Not really. Unless you crave meat once in a while" "I usually take Vitamin B12 daily"
	Environment	"I feel like it depends on where you are from…" "Especially a place like here you are not going to be eating out a lot"

Appendix J

Table 3
Non-Vegetarian Theme Summary

Theme	*Sub-theme*	*Raw Data*
Social Stereotypes	Cultural Norms	"Vegetarians have a negative stigma in this area because this area is a meat and potatoes kind of place"
		"Probably has a lot to do with the culture I grew up around"
		"I have a lot of farmers in my family. So I think they would disown me if I considered a vegetarian diet"
	Judging	"Generally I think people would question that and being a collegiate athlete"
		"Some believe it is totally bad for the body"
		"I feel like there is that stigma of vegetarians having a harder time getting protein and do not perform as well"
Health Impact	Concern	"…I feel like my strength would decrease on a vegetarian diet"
		"I just think I would get worse..."
		"For college athletes, no it is not an adequate diet"
	Perceived Health Deficiencies	"It is harder to get iron and protein on that type of diet"
		"I have a hard time thinking it is healthy for athletes because we need that extra protein"
		"…like I said you can get adequate protein from nuts, beans, and rice, but its just not going to meet the standard of what meat can give you"
Practicality	Food Preparation	"It is meal prepping that takes the most time"
		"It does come down to preparing your own food"
	Lack of Knowledge	"No, I cannot say I know any positive or negative health effescts of a vegetarian diet"
		"No. No I am not aware of any health effects of a vegetarian diet"
		"…but like positive benefits I don't know much about that"
		"Yea I have only heart that it is healthy"