

AN EXAMINATION OF STRENGTH TRAINING PRACTICES IN A SAMPLE OF  
VARSITY HIGH SCHOOL ATHLETIC PROGRAMS IN IDAHO

By

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## ABSTRACT

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The use of strength training, or resistance training to improve athletic performance, is growing among athletes of all ages. Currently, Idaho possesses no rules, regulations, and/or guidance for varsity high school athletics and strength training.

**PURPOSE:** The purpose of this research was to explore the current practices for varsity level high school athletes and strength training. Specifically, examined were: who designs and implements strength training programs for varsity high school athletes, what kinds of training activities they do for their programs, and whether the responsible party or emphasis of strength training changes depending on the gender of the athletes.

**METHODS:** Coaches of soccer, basketball, and softball/baseball in three Idaho school districts were asked to complete an online survey. **RESULTS:** Seventy percent (34/48) of the coaches who were eligible to participate responded to the questionnaire.

Approximately half (51.6%) of the respondents coached male athletes and 45.2% coached female athletes. The majority of coaches provided strength training opportunities for their athletes (84.3%), although only 37% *required* participation. The majority of strength training programs were designed and implemented by either the physical education teachers (40.7%) or head coaches (25.9%). Physical education teachers designed and implemented the majority of the strength training programs for female athletes, whereas, head coaches designed and implemented the majority of strength training programs for male athletes. Coaches of both male and female athletes provided equal opportunities for strength training for their athletes, but coaches of male athletes were more likely to *require* their athletes to participate. Most programs included dynamic warm-ups and cool-downs, plyometrics, agility training, speed training, and conditioning and most programs were conducted three days a week (76%) for sessions lasting between 30 and 59 minutes (62.5%). Compared to their female counterparts, male athletes were more likely to strength train year round and train using more sessions per week. **CONCLUSION:** The results of this study provide knowledge, where none exists, about the individuals who are responsible for designing and implementing high school strength training programs for three major sports in three large school districts in Idaho. **PRACTICAL APPLICATIONS:** If more is known about strength training practices in high schools with athletic teams in soccer, basketball, and baseball/softball, individuals responsible for designing programs can critically examine their own programs to ensure that programs are fundamentally sound.

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## CHAPTER ONE: INTRODUCTION

More than half (53.5%) of all high school students nationwide participated in school athletics during the 2005-2006 school year (Stevenson, 2007). According to Stevenson (2007), out of the 7 million high school athletes, 3 million are females and 4.2 million are males. During the last three decades, Stevenson (2007) reported that the percentage of male athletes has remained stable at about 50% of all high school athletic participants while the percentage of female athletes' has increased. Title IX should be credited for the increase in female participation (Acosta & Carpenter, 2008). Title IX is a federal law that prohibits education institutions from discrimination on the basis of sex (Acosta & Carpenter, 2008). When applied to athletics, this law means that if schools offer programs, these must be equitable for both female and male participants. Most aspects of athletics are regulated by Title IX, excluding athletic strength training; however, no information currently exists with respect to strength training practices in Idaho high schools.

Athletic strength training, which consists of progressive resistance training, for high school male and female athletes is important to maintain a healthy body weight, strengthen ligaments and tendons, develop pliable soft tissue, increase motor fitness skills, and overall improve athletic performance (Ashmore, 2003; Faigenbaum, 2000a). Zatsiorsky and Kraemer (2006) indicated the primary benefits for youth athletes to strength train are to “increase muscular strength and endurance, improve sport



performance, prevent sport injuries, and develop life long exercise habits” (p. 203). The National Strength and Conditioning Association’s (NSCA) position statement suggest benefits such as improved cardiovascular risk profile, weight control, stronger bones, enhanced psychosocial well-being, improved motor skill performances, and increased resistance to sport injuries (Faigenbaum et al., 2009).

Faigenbaum (2000b) and Vaughn and Micheli (2008) found that appropriate training guidelines for youth and adolescent strength training can result in a safe and effective method for conditioning athletes. Zatsiorsky and Kraemer (2006) agreed, stating children’s health could improve, rather than be adversely affected, when training with appropriate guidelines for their age. The lack of standards, regulations, and rules for Idaho high school athletic programs jeopardizes the potential benefits of strength training programs (Faigenbaum, 2000a). In Idaho high school athletics, it is likely that team coaches are responsible for athletic strength training, not strength training professionals. Twist and Hutton (2007) stated that even with the growth in science and practical training for athletic strength training, team coaches are training athletes. Researchers also suggest that female strength training lags behind their male counterparts because of the fear of “bulking up,” traditional gender identities, and the lack of female role models (Duff, Hong, & Royce, 1999; Poiss, Sullivan, Paup, & Westermen, 2004; Welch & Sigelman, 2007).

### **Purpose**

Given the lack of information about strength training programs in Idaho high school athletics, the researcher is determined to provide knowledge in an area where no previous research exists. The purpose of the research was to: a) determine who is

responsible for designing and implementing varsity high school strength training programs in soccer, basketball, and softball/baseball in three school districts in Idaho, b) examine what kinds of programs they are using, and c) discern whether the responsible party and emphasis of strength training changes depending on the gender of the athlete.

The first and second research questions are: Who is responsible for designing and implementing varsity high school strength training programs in Idaho and what kinds of programs are they using? Although no previous research in this area exists, based on anecdotal evidence gathered during my 4 years as a high school softball and basketball coach in Idaho, I hypothesize that sport coaches will be the individuals primarily responsible for implementing varsity high school strength training programs in Idaho. Because there are no data related to types of programs being developed, no hypotheses were developed for this part of the research question. The third research question is: Does the person responsible and the emphasis of strength training change depending on the gender of the athletes? Three questions have been developed by the researcher to examine whether differences exist. First, do male and/or female athletes strength train? Second, do the coaches *require* males and/or females to strength train? Finally, is there a gender difference in which athletes receive more adequate training and/or have more qualified individuals who design and implement programs? After an extensive review of literature, the researcher hypothesizes that male athletes will strength train more, face more strength training requirements, and obtain the benefit of having more qualified strength training professionals (Marinez, 2004; Poiss et al., 2004; Todd, Lovett, & Todd, 1991).

### **Significance of the Problem**

The major problem with strength training in high school centers on the fact that individuals do not have to hold a certification or standard of qualification to design and implement strength training programs for varsity high school athletes in Idaho. High school strength training is something that is done often, but typically without standards, rules, and regulations. Through this research, the responsible parties, what they are doing, and gender differences, if any, will be determined, which in turn, will enable us to examine high school strength training program certifications, instructor qualifications, and resultant programming.

By determining who is designing and implementing varsity high school strength training programs, this research can provide state activities associations and school districts with recommendations for standards, rules, and regulations for the safety of the athletes and encourage the development of more successful programs. By determining if there is a gender difference among programs used for the athletes, this research can also determine whether the typical barriers to strength training in Idaho female high school athletes are similar to those experienced by other female athletes as specified in the literature (Duff et al., 1999; Poiss et al., 2004; Welch & Sigelman, 2007).

### **Definitions**

For the purpose of this study, the following terms have been defined.

*Athletic strength training.* Faigenbaum (2000a) defines athletic strength training as a “specialized method of conditioning that involves the progressive use of resistance to increase one’s ability to exert or resist force” (p. 170).

*Bulking up.* The idea of developing large muscle mass from lifting heavy weights.

*Strength training program.* Organized athletic strength training to improve muscular strength and endurance for athletes through quality instruction and proper rate of progression (Faigenbaum, 2000a).

*Title IX.* “A federal law prohibiting sex discrimination in all aspects of an education program or institution which receives federal money” (p. 16) (Acosta & Carpenter, 2008).

*Traditional gender identities.* Society’s idea of feminine and masculine roles (e.g., women are homemakers/mothers and men are businessmen/hunters).

*Varsity high school athlete age range.* Athletes’ ages can range from 14-19 years old. Typically, freshmen are the youngest and seniors are the oldest.

*Accelerated physical education.* According to the handbooks and curricula of Boise High and the Meridian Joint School District No. 2, it is a physical education class that provides advanced skills, concepts, and activities because of the advanced physical/athletic abilities of the student. In many cases, the students have to be playing a sport during the semester they are enrolled in the class. It is also referred to as Athletic Fitness class and Advanced Physical Education class.

### **Limitations**

The coaches’ honesty on the questionnaire may be a limitation for this study. The researcher presumes that the coaches responded to the questionnaire, including background information, with their utmost honesty. Coaches’ honesty, however, does not necessarily portray their knowledge of strength training. A second possible limitation

is that strength training for the general public is different than strength training for athletic performance. This concept is understood by the researcher but may not be understood by coaches or the general public who do not have training in this area. Third, school district and individual school policies and procedures for athletic competition are not within the control of the researcher. Therefore, the researcher acknowledges that some school districts and individual schools may provide standards that are not enforced by the state of Idaho, which may bias results of the study. Fourth, although the survey will be sent to all soccer, basketball, and softball/baseball coaches in three Idaho school districts, there is no guarantee that all coaches will participate. Therefore, a small sample size may be a limitation. Finally, research conducted in the Treasure Valley area of the state of Idaho at the high school level is not generalizable to coaches in other states or at a level other than high school.

### **Delimitations**

To ensure objectivity and confidentiality, the researcher will use surveymonkey.com to administer the questionnaire to the coaches in the three local school districts. Therefore, in order for the project to generate valid and reliable data, all coaches who participated had to have access to a computer and a degree of computer literacy.

## CHAPTER TWO: REVIEW OF LITERATURE

### **Introduction**

To help formulate the research questions and methods used for this study, a thorough literature review was conducted. Components of this literature review include current practices and qualifications in high school strength training, certification opportunities for strength training instruction/coaching, existing strength training research on high school aged athletes, and myths related to females and strength training.

### **Current Practices and Qualifications in Idaho High School Strength Training**

Idaho High School Activities Association (IHSAA), the governing body over high school athletics in Idaho, does not provide any standards, rules, or regulations for athletic directors and/or coaches for the practice of athletic strength training (IHSAA, 2008). More specifically, Treasure Valley area school districts, Boise, Meridian, and Nampa (the largest urban districts in the Southern Idaho Conference), according to their handbooks, do not have standards, rules, and regulations for athletic directors and coaches regarding the safe and effective practice of strength training. This lack of standards, rules, and regulations in the Treasure Valley area high schools is not unique to Idaho. When literature searches were done to locate practices in other states, no studies were found that address this topic. Therefore, it is apparent that little regulation and oversight is provided in the area of safe and effective strength training with high school athletes.

## Certification

School districts and state governing bodies may not provide guidelines for strength training programs, but there are organizations that offer certifications for strength training professionals. The National Strength and Conditioning Association (NSCA) offers the only certification accredited by the National Commission for Certifying Agencies, which is the Certified Strength and Conditioning Specialist (CSCS) (National Strength and Conditioning Association [NSCA], n.d.). Along with NSCA, organizations such as the International Sports Science Association (ISSA) and the American College of Sports Medicine (ACSM), to name a few, offer certifications for advanced strength training professionals. All three of the organizations offer advanced strength training certifications but out of the three, only NSCA and ACSM require a bachelors' degree in a related field for certification.

A certification provides strength training instructors with proper guidance for a youth athletic strength training program. Governing bodies such as the NSCA present position statements that delineate the most current knowledge in the field to professionals, and offer recommendations on concepts specific to youth athletes and strength training. The NSCA has seven concepts from the current updated position statement (Faigenbaum et al., 2009) about the benefits of properly designed and supervised strength training programs for youth athletes. The benefits can be summarized as follows (Faigenbaum et al., 2009, p.S61):

- Relatively safe
- Enhances muscular strength and power
- Improves the cardiovascular risk profile

- Improves motor skill performance and may contribute to enhanced sports performance
- Increases resistance to sports related injuries
- Helps improve psychosocial well-being
- Helps promote and develop good exercise habits

The updated 2009 position statement from NSCA also provides recommendations on principles specific to designing and implementing youth strength training programs (Faigenbaum et al., 2009). The statement are specific guidelines for providing qualified instruction and supervision, warm-up and cool-down, choice and order of exercises, training intensity and volume, rest intervals, repetition velocity, training frequency, program variation, and individual needs and concerns. When all of these principles are accomplished to the fullest extent, it makes for safe and effective high school strength training programs.

Duehring and Ebben (2010) conducted a study to determine the profile of high school strength and conditioning coaches. Coaches with a memberships in the National Strength and Conditioning Association who design and implement high school strength training programs were surveyed. For the 24 states that were represented, all but one coach was certified and out of the coaches who were certified, 83% were certified by the NSCA (Duehring & Ebben, 2010). The strength and conditioning coaches were also educated along with being certified. More than half (51.9%) of the coaches had a Bachelor's Degree and another 42.6% had their Master Degree (Duehring & Ebben, 2010). This study showed amazing standards for high school strength and conditioning coaches, however, it must be noted that nationwide, only 128 of all individuals who



design and implement high school strength training programs fall under the membership of the NSCA, which upholds exceptional standards.

Athletic directors, coaches, athletes, and parents need to be aware of this potential certification opportunity and the current lack of requirements for a professional because young athletes should not suffer injury or possibly death because of a lack of knowledge or training at any level.

### **Existing Research on Strength Training in High School Athletics**

An examination of strength training practices in Idaho's high schools would not be complete without first examining a variety of studies that have tested the efficacy of strength training in high school athletes. To help strength training professionals succeed with both male and female athletes, an examination of the existing literature related to high school athletes is presented in Table 1.

Table 1

*Summary of Studies Related to Strength Training in High School Athletes*

<b>Author</b>	<b>Date</b>	<b>Subjects</b>	<b>Description of Project</b>	<b>Results</b>	<b>Significant Findings</b>
Alloway	2005	78 sophomore student athletes (14-15 years old)	Developing a resistance training class for younger high school athletes who are inexperienced with training	Injury prevention and athlete safety and care are protected by procedures put in place by the program designers which include: A.) program purpose, B.) balanced program, C.) capability of students, D.) exercise selection, E.) Teacher/student ratio, F.) medical screening, G.) qualified supervision, H.) proper facilities and equipment, I.) rules explained and enforced and J.) record progress.	The program was successful at increasing strength because it provides proper procedures for safety and monitoring programs that challenge and provide benefits for youth athletes.
Channell & Barfield	2008	27 high school male athletes with previous training	8 weeks of specific training (3 groups): Olympic Lifts, Power Lifts, and control group	Both olympic lifts and power lifts improved athletic vertical jumps. The control group experienced detraining and a loss of athletic vertical jump power.	Olympic lifts proved to be substantially better with improving vertical jump power compared to control group.
Heidt et al.	2000	300 female soccer players ages 14-18	Players were studied over a one year period. 42 trained players and 258 untrained.	14% of trained players sustained injuries compared to 33% of untrained players.	Untrained athletes were more likely to experience season-ending injuries compared to trained athletes.
Hewett et al.	1999	43 high school volleyball, soccer, and basketball teams (1263 athletes)	Teams monitored throughout their seasons. Group 1 was untrained females, group 2 was trained females and group 3 was untrained males.	Untrained females have an injury rate 3.6 times higher than the trained females and 4.8 times higher than untrained males.	Serious knee injuries are more likely to occur in untrained female athletes and happen most often to soccer and basketball players.
Santos & Janeira	2008	25 male athletes ages 14-15 years old	10 week in-season training: control and complex training (weight training and plyometrics)	The complex training group improved all 4 explosive tests and the control group decreased in all tests except one.	Complex training can improve both upper and lower body explosiveness.

Three conclusions were drawn after examining current practices of high school athletic strength training from Table 1. First, many of the studies have small sample sizes. Second, studies that combined program types (e.g., plyometrics and weight lifting) were more effective than traditional “resistance training only” programs. Third, there is not a huge array of studies done for current practices of high school age athletes and strength training but there is more and more research being conducted to close gaps in the field of strength training and high school athletes. These results signify the need for more standards, more training, and advanced knowledge in the field of strength and conditioning to manage the athletic potential and minimize injury risk in high school athletes.

Two review papers provided information about high school athletes and strength training. Twist and Hutton (2007) described three pillars that strength training must provide for the success of youth programs. The facilitators need to understand and implement the three pillars: a) aspects of sport movement, b) sport strength, and c) sport balance in order to develop effective training programs (Twist & Hutton, 2007). Willoughby (1990) concluded that high school athletes who participate in supervised weight training programs tend to have lower injury rates and lose fewer days of practice during injuries. The review of literature concluded that proper strength training programs can increase power and strength along with providing injury prevention.

High school athletic strength training and current practices and qualifications, certification opportunities, and existing training methods have been investigated. The next section of this literature review explores some myths relative to female athletes and strength training.

### **“Bulking up”**

First and foremost, female athletes can and will benefit from proper athletic strength training programs (Ashmore, 2003). The myth that “women will bulk up from strength training” is prevalent among athletes and merits further study. Some female athletes are concerned that they would be less attractive with too much muscle mass (Duff et al., 1999). Coaches and athletes need to understand the differences in physique, body composition, and physiological responses to resistance exercise in order for female athletes to have success in strength training and conditioning (Faigenbaum, 2000b). Female athletes’ bodies are different than their male counterparts and their bodies respond differently to strength training.

Luckily, athletic performances of female athletes can be improved through strength training, much like their male peers’ performances. According to Mannie & Vorkapich (2007), female athletes will improve muscle, ligament, tendon, and bone strength from proper strength training programs. When compared to male athletes, female athletes do not acquire the same absolute strength but they can obtain comparable strength relative to their body mass (Mannie & Vorkapich, 2007). This brings forth the question: when women gain strength, do they “bulk up?” Two researchers answered this question. Both confirmed that women typically do not “bulk up” as a result of strength training programs.

Kraemer et al. (1991) examined hormone levels in men and women athletes who strength train. He specifically examined testosterone because testosterone is needed in order for strength training to increase muscle mass. Females have about 10 times less testosterone than males; therefore, men can “bulk up” and increase muscle mass and

women tend to gain strength without gaining significant muscle mass (Kraemer et al., 2007). The review of literature by Reddin (2006) concluded that regular strength training programs increase muscle mass and decrease fat mass in females, but overall body part circumferences have small changes, even with a heavy strength training program. Strength training is beneficial for female athletes' performances and they will not necessarily "bulk up." Along with debunking the myth of female's "bulking up," knowledge about traditional gender identities are also relevant to the success of high school strength training programs with females.

### **Traditional Gender Identities**

A fear of strength training could also be instilled in females because traditional gender identities are skewed. Evan (2006) and Krane, Choi, Baird, Aimar, and Kauer (2006) stated that females struggle with traditional gender identities because they must balance sport competence with a feminine body image. Both studies showed female athletes in multiple roles. In other words, female athletes are expected to be feminine and athletic. Their research identified stereotypical gender roles as a reason for the lack of success in female strength training programs.

Klomsten, Marsh, and Skaalvik (2005) also identified perceptions of boys and girls on feminine and masculine characteristics within sports. They found that important characteristics for boys were appearance (strength), sports competence, endurance, strength, and masculinity, while girls valued appearance (good looking face and slender body) and femininity. This study of eighth, ninth, and tenth graders demonstrated that stereotypical roles for male and female athletes are present and significant, even at younger ages (Klomsten et al., 2005).

The three previous studies state that males and females alike are persuaded by traditional gender identities but Poiss et al. (2004) give a different perspective. They conducted a study that concluded female athletes believed strength training was important for both male and female athletic performances; to the contrary, males believed that only their athletic performances could be enhanced by strength training, not the performances of females. Poiss et al. (2004) also found that coaches of male athletes were more likely to require strength training for their male athletes compared to coaches of female athletes who did not require strength training. In summary, females may not be the individuals who hinder their own performances. Traditional gender identities that society upholds may be the problem that most likely interferes with the success of female athletes who strength train. Female athletes' efforts during strength training may be compromised for the preferred feminine body image of male peers and coaches. Consideration for more female role models, which would include coaches and athletic directors, may provide female athletes with a different perspective of female athletes and strength.

### **Female Role Models**

Along with "bulking up" myths and traditional gender identities that keep female athletes from reaching their full potential, women are still not given many of the top positions within athletics (Welch & Sigelman, 2007). The lack of female role models has a detrimental effect on female athletes and explains some of the lack of success with strength training in females. In 2004, collegiate strength and conditioning head coaches were predominantly male (i.e., 99%) (Marinez, 2004). Todd et al. (1991) also demonstrated that 99% of the strength and conditioning collegiate head coaches were

males and that 77% of male strength and conditioning assistants coached female athletes compared to only 16% of female assistants who coached male athletes. Male strength coaches are hired to coach either male and/or female athletes whereas female strength coaches are hired strictly to coach female athletes.

The same study revealed that collegiate strength and conditioning coaches spend more time coaching male athletes than their female counterparts. The strength and conditioning coaches spent a mean of 40 hours a week with males and 30 hours a week with females, which is significantly different (Todd et al., 1991). Again, research showed that female athletes who strength train are not given as much time or effort as their male counterparts. Interestingly, no studies have examined these trends in high school athletic programs. Women who pursue strength and conditioning coaching will have to step into a field that clearly limits their potential and experience.

Female strength and conditioning coaches are underrepresented along with team coaches. According to Jacobson (2001) in her 1999-2000 study of NCAA Division I female athletics, there were more male coaches than female coaches for the women's sports. The only time women coached males was when they coached teams of both males and females, unlike their male counterparts (Jacobson, 2001). The study also concluded that there are more male assistant coaches than female assistant coaches for female sports (Jacobson, 2001).

A national longitudinal intercollegiate study by Acosta and Carpenter (2008) also showed fewer females coaching women sports with only 42.8% of all women's teams coached by females, and only 2-3% of men's teams. The studies by Jacobson (2001) and

Acosta and Carpenter (2008) signify the need for more female role models in female athletics.

Perhaps one of the reasons there are far fewer female team coaches and strength and conditioning coaches is the lack of females as athletic directors. Whisenant, Pederson, & Obenour (2002) found that less than 19% of their subjects in an athletic administration study were females, and as the level of NCAA division increased (e.g., from NCAA Division III to NCAA Division I), it was less likely that a female held the top position as head athletic director. Females typically hold positions as assistant and associate athletic director (Whisenant et al., 2002). Women in top positions can change females' experiences as athletes by providing females an equal opportunity to obtain positions of higher power in athletics. Welch and Sigelman (2007) concluded that women coaches were more prevalent in schools where athletic director positions were held by women. An increase in the number of females in leadership positions at all levels will help female athletics and strength training.

### **Conclusion**

Male and female varsity high school athletes can and will benefit from proper strength training programs, but governing bodies need to provide standards, rules, and regulations for athletic directors and/or coaches. Of the studies that have been done with high school athletes, most have reported that strength training has beneficial effects on sport performance, especially when strength training is combined with other forms of training such as plyometrics and dynamic warm-ups (Channell & Barfield, 2008; Santos & Janeira, 2008; Twist & Hutton, 2007; Willoughby, 1990). Female athletes, unlike their male counterparts, need to debunk myths about "bulking up," and not fulfilling traditional



gender identities. Lastly, female varsity high school athletes need more female role models in athletics to help them pave successful paths.

## CHAPTER THREE: METHODS

### **Participants**

Participants were varsity high school coaches from three different school districts in the Southern Idaho Conference. Sports coached included soccer, basketball, and baseball/softball. These sports were chosen by the researcher because they are offered by all the schools in the three districts and are similar for both genders. The three school districts are Boise Independent, Meridian Joint, and Nampa, with five high schools in Meridian Joint, four in Boise Independent, and three in Nampa. These three school districts were used because they represent large districts in the Southern Idaho Conference, which have some of the largest urban populations in the state of Idaho. Using the three sports at the three different school districts provided the researcher with a potential pool of 72 head varsity coaches. It was anticipated at least 60%, or 43 coaches, would participate in a typical internet-based survey (Cook, Heath, & Thompson, 2000). To enhance response rate, those who did not reply were contacted via email on three additional occasions, at one week intervals (Cook et al., 2000). The researcher anticipated coaches would equally represent both male and female athletes. It is likely that in Idaho, varsity high school coaches are the individuals who determine who will be responsible for designing and implementing strength training programs for varsity high school athletes, thus they are the ones being surveyed (Twist & Hutton, 2007).

### **Instrument**

Coaches responded to a questionnaire designed by the researcher using the website [surveymonkey.com](https://www.surveymonkey.com) (see Appendix A). The researcher used a mixed-method quantitative and qualitative approach whereby 72 coaches were asked to reflect and tell their own perspective and story. The questionnaire consisted of open-ended, semi open-ended, and closed questions. To enhance the construct and content validity of the questionnaire, a thorough literature review was conducted and three experts in this area were consulted to help with the design of the questionnaire. The questionnaire was pilot-tested with a small sample of coaches from the Mountain Home School District, Mountain Home, Idaho.

### **Research Design**

The researcher obtained approval for the research project through the three school districts. With the approval of each school district, the researcher then contacted all Principals and Athletic Directors to receive further approval for the research project. Then, the researcher used the High School Athletics' webpage to obtain coaches' contact information. The athletic director was approached for contact information for those coaches whose contact information was not available from the schools webpage. Coaches were then contacted via email, with a link to the questionnaire at [surveymonkey.com](https://www.surveymonkey.com). Response rate was increased by contacting subjects before the initial email with the link to the survey and by sending out at least three emails after the link was provided, approximately one week apart, to the subjects for the study (Cook et al., 2000). Once coaches completed the questionnaire, it was assumed that they consented to participate in this study. Once both forms were completed, the information was

available to the researcher through surveymonkey.com. When the study was completed, the coaches received a one page summary of the study results.

### **Data Analysis**

After four weeks of collecting data on surveymonkey.com, the qualitative answers were put in common themes and descriptive statistics were calculated. The researcher used a mixed-method approach because no previous research has examined who is responsible for designing and implementing high school strength training programs, and no one has explored the idea of strength training and gender roles in Idaho high school athletic programs. Using both qualitative and quantitative techniques ensured that multiple questions are answered in depth, which is not possible using quantitative research only.

To answer the first research question, “who is responsible for *designing* high school strength training programs in Idaho?,” the researcher used a semi open-ended multiple choice question with five options including an open-ended “other” option if needed. The choices for the question were determined after an extensive review of literature and a thorough review by a panel of experts. The researcher used percentages to show the differences among the individuals who designed Idaho high school strength training programs. The researcher also used percentages to present information about the individual program designers, such as resources/information used, education level, and credentials. The researcher used the same semi open-ended question format for information from the subjects in all three of these areas.

The researcher used a similar approach to answer, “who is responsible for *implementing* the strength training programs?” Again, a semi open-ended multiple

choice question with the same five options, which were also developed through the review of literature and reviewed by a panel of experts. The researcher once more used percentages to show common themes related to the resources/information used, education level, and credentials of the individual who implemented programs. As before, the researcher used the same format from the previous semi open-ended questions.

A semi open-ended choice question was asked to answer the second research question, “what types of training are coaches currently doing with strength training?” Answer choices were chosen by the researcher because they were present in the review of literature. Percentages were used by the researcher to show differences among training techniques with high school age athletes in Idaho.

To answer the third research question, “does the person responsible and the emphasis of strength training change depending on the gender of the athletes?,” participants were asked if male and/or female athletes strength train and if they do, are they *required* to participate in the program. Participants’ responses were also analyzed for patterns such as male athletic teams having more strength training opportunities or personnel having better qualifications compared to their female counterparts. Closed questions (yes/no) were used to answer if athletes strength train, and if they do strength train if it is *required*. Comparisons between the percentages of male and female athletes who strength train and are *required* to strength train were made. The final part of the question was more complicated to answer because the researcher had to consider the differences among the gender of the athlete when it came to the individuals who designed and implemented Idaho high school strength training programs, the resources and/or information those individuals used, their years of experience, their level of education, and

their credentials. The top themes were compared by percentages to show significant differences where they exist.

## CHAPTER FOUR: RESULTS

### **Response Rate**

The primary investigator received IRB and administrator approval to contact the coaches of soccer, basketball, and baseball/softball at eight of the 12 high schools in three large Southern Idaho Conference school districts. The 72 possible coaches decreased to 48 because approval was obtained from only eight schools. Thirty-four of the 48 possible coaches responded to the online survey, resulting in a response rate of 70.8%. Two surveys were eliminated because of the lack of information completed by the coach.

### **Head Coach Background Information**

Head coaches surveyed were responsible for coaching both male (51.6%) and female athletes (45.2%), with one head coach who coached both male and female athletes. Head coaches who completed the survey had plenty of experience as head coaches. More than one-third (38.7%) had 12 or more years of coaching experience, 19.4% had 8-11 years, 25.8% had 4-7 years, and 16.1% had 3 or fewer years of experience. When asked if the coaches had playing experience in the sport for which they are a head coach, 81.3% responded that they played the sport they coach in high school or both in high school and in college. Only 18.8% of the coaches did not play the sport they coach, but they did play other sports in high school or in high school and college.

### Person Responsible for Designing and Implementing Strength Training Programs

Table 2 presents data about the individuals who designed and implemented programs. Individuals who designed and implemented varsity high school strength training programs in Idaho (Research Question #1) were most commonly physical education teachers, followed closely by head coaches. Eleven out of the 27 coaches (40.7%) allowed physical education teachers to design and implement strength training programs and 7 of 27 coaches (25.9%) designed and implemented their own programs as the head coach. A small percentage of individuals who designed these programs had other credentials (18.5%) and eleven percent of the individuals delivering programs were certified.

Table 2

#### *Individuals Who Design and Implement Programs*

<i>Individuals Who Design and Implement Programs</i>	<i># of Individuals and (%)</i>
<i>Physical Education Teacher</i>	<i>11 (40.7)</i>
<i>Head Coach (Self)</i>	<i>7 (25.9)</i>
<i>Other</i>	<i>5 (18.5)</i>
<i>Certified Professional</i>	<i>3 (11.1)</i>
<i>Other Coach on Staff</i>	<i>1 (3.7)</i>

### Strength Training Practices

The majority of coaches responded that their athletes participated in strength training (84.3%). Interestingly, only 37% of head coaches *required* their athletes to



strength train. Strength training programs for high school athletes were evenly distributed between being year round (34.6%) or throughout the school year (30.7%).

The coaches of the male athletes who participated in this study were more likely to *require* their athletes to strength train than the coaches of the female athletes. Even though coaches had concerns that they technically could not *require* their athletes to strength train, 50% of coaches of male athletes still *required* their athletes to strength train compared to only 9.1% of coaches of female athletes.

Strength training programs for high school athletes were done either year round or throughout the school year. Typically, programs were completed three times or more a week (76%) for 30-59 minute sessions (62.5%). Male athletes were more likely to strength train year round and train using more sessions per week than their female counterparts. Fifty percent of the coaches of male athletes had their athletes strength train year round compared to 16.7% of coaches of female athletes. Almost all male athletes (92.8%) participated in strength training 3 or more days a week compared to just over half of female athletes (54.5%). Table 3 presents the different types of training that were commonly utilized in high school varsity strength training programs in the three selected sports in Southern Idaho. The most frequently used type of training was conditioning, followed by agility training, plyometrics, dynamic warm-up and cool-down, and speed training.

Table 3

*Types of Training Used in Addition to Strength Training*

<i>Other Types of Training</i>	<i># of Coaches and (%)</i>
<i>Conditioning</i>	<i>20 (83.3)</i>
<i>Agility Training</i>	<i>19 (79.2)</i>
<i>Plyometrics</i>	<i>18 (75.0)</i>
<i>Dynamic Warm-up/Cool-down</i>	<i>17 (70.8)</i>
<i>Speed Training</i>	<i>17 (70.8)</i>
<i>Other</i>	<i>2 (8.3)</i>

**Gender Differences**

In addition to the gender differences in strength training practices mentioned in the paragraph above, Table 4 presents data related to gender and program delivery. One of the major differences in strength training programs based on gender is that the gender of the athlete seems to be related to the individual responsible for designing and implementing strength training programs (Research Question #2). Coaches of female athletes rely on physical education teachers for designing and implementing programs, whereas coaches of male athletes design and implement their own programs for their athletes. There were no certified strength coaches providing programs for female athletes and only one strength coach for male athletes was certified.

Table 4

*Gender Differences in the Individuals Who Design and Implement Programs*

<i>Individuals Who Design and Implement Programs</i>	<i># for Female Athletes and (%)</i>	<i># for Male Athletes and (%)</i>
<i>Physical Education Teacher</i>	<i>7 (63.6)</i>	<i>4 (28.6)</i>
<i>Head Coach (Self)</i>	<i>0 (0)</i>	<i>7 (50.0)</i>
<i>Other</i>	<i>3 (27.3)</i>	<i>2 (14.3)</i>
<i>Other Coach on Staff</i>	<i>1 (9.1)</i>	<i>0 (0)</i>
<i>Certified Professional</i>	<i>0 (0)</i>	<i>1 (7.1)</i>

Table 5 presents information about the education level of individuals who design and implement programs. Interestingly, coaches of female athletes were less likely than coaches of male athletes to know the education level (40%), credentials (70%), and number of years of experience (50%) of the individual providing the program. In contrast, coaches of male athletes were very aware of the education level, credentials, and number of years of experience of their strength training coaches. Of the individuals coaching male athletes, only 7.1% were unsure of education level, 21.4% were unsure of credentials, and 7.1% were unsure of the number of years of experience. If the credentials of strength training coaches for female athletes were known, the most common education level was a Bachelor of Physical Education. For male athletes, the most common education level of strength training coaches was a Master of Physical Education, followed closely by a Bachelor of Physical Education. Additionally, there were a significant proportion of coaches who had a degree that was unrelated to the field of strength training in boys' varsity athletics.

Table 5

*Education Level of the Individuals Who Design and Implement Programs*

<i>Highest Level of Education</i>	<i># for Female Athletes and (%)</i>	<i># for Male Athletes and (%)</i>
<i>Bachelor In Physical Education</i>	<b>5 (50)</b>	<b>3 (21.4)</b>
<i>Master in Physical Education</i>	0 (0)	<b>4 (28.6)</b>
<i>Doctorate in Physical Education</i>	1 (10)	1 (7.1)
<i>Unsure</i>	<b>4 (40)</b>	1 (7.1)
<i>Unrelated Bachelor</i>	0 (0)	2 (14.3)
<i>Unrelated Master</i>	0 (0)	1 (7.1)
<i>Unrelated Doctorate</i>	0 (0)	1 (7.1)
<i>Some College</i>	0 (0)	1 (7.1)

Table 6 presents information about the credentials of individuals who provide strength training. The majority of coaches of female athletes (70%) did not know whether their strength training coaches were certified. When the credentials of strength training coaches were known in female sports, only one strength coach was certified by Bigger, Faster, Stronger (BFS) and none were certified by the American College of Sports Medicine (ACSM) or the National Strength and Conditioning Association (NSCA). For male sports, the majority of coaches knew whether or not their strength coaches were certified (79%). A large percentage (50%) were not certified to provide strength and conditioning coaching, but those who were certified were credentialed through the NSCA (CSCS) (21.4%) or Bigger, Faster, Stronger (BFS) (21.4%).

Table 6

*Credentials of the Individual Who Design and Implement Programs*

<i>Credentials</i>	<i># for Female Athletes and (%)</i>	<i># for Male Athletes and (%)</i>
<i>Unsure</i>	7 (70)	3 (21.4)
<i>Uncertified</i>	1 (10)	7 (50)
<i>BFS</i>	1 (10)	3 (21.4)
<i>NSCA (CSCS)</i>	0 (0)	3 (21.4)
<i>Other</i>	1 (10)	1 (7.1)
<i>ACSM</i>	0 (0)	1 (7.1)
<i>ISSM</i>	0 (0)	1 (7.1)

*Key.* BFS – Bigger, Faster, Stronger; NSCA (CSCS) – National Strength and Conditioning Association (Certified Strength and Conditioning Specialist); ACSM – American College of Sports Medicine; ISSM – International Sports Sciences Association.

An open-ended question followed up the credential question. Coaches were asked about other experience and/or qualifications the individual who designs and implements their strength training programs possess. Coaches of male athletes answered that they attended clinics held by college coaches and trainers, workshops, professional development opportunities, or pursued further licensure (e.g., in soccer training and plyometrics). Coaches of female athletes also attended workshops, seminars, and coaching clinics. Coaches of both male and female athletes sought other opportunities to improve knowledge in the field of athletic strength training.

Table 7 presents a summary of the number of years of experience that an individual has designing and implementing strength training programs. In female athletics, most coaches (50%) were unsure of the number of years of experience held by the strength training coach. When number of years was known, most had 8 or more years of experience (40%). For male sports, the majority of strength training coaches had between 4-11 years of experience (57.2%) and smaller percentages had fewer than 4 (14.3%) or more than 12 (21.4%) years of experience.

Table 7

*Years of Experience the Individual has Designing and Implementing Programs*

<i>Years of Experience</i>	<i># for Female Athletes and (%)</i>	<i># for Male Athletes and (%)</i>
<i>0-3</i>	<i>0 (0)</i>	<i>2 (14.3)</i>
<i>4-7</i>	<i>1 (10)</i>	<i>4 (28.6)</i>
<i>8-11</i>	<i>2 (20)</i>	<i>4 (28.6)</i>
<i>12 or more</i>	<i>2 (20)</i>	<i>3 (21.4)</i>
<i>Unsure</i>	<i>5 (50)</i>	<i>1 (7.1)</i>

The coaches of the male athletes who participated in this study were more likely to require their athletes to strength train than the coaches of the female athletes. Even though coaches had concerns that they technically could not *require* their athletes to strength train, 50% of coaches of male athletes still *required* their athletes to strength train compared to only 9.1% of coaches of female athletes. Male athletes were also more likely to strength train year round and train using more sessions per week than their

female counterparts. Fifty percent of the coaches of male athletes had their athletes strength train year round compared to 16.7% of coaches of female athletes. Almost all male athletes (92.8%) participated in strength training 3 or more days a week compared to only half of female athletes (54.5%).

When coaches were asked if they believed there is a difference in approach to designing and implementing programs for male and female athletes at the high school level, the majority (60%) of coaches of male athletes said there was no difference, whereas the majority of coaches of female athletes (85.7%) said there was a difference. Among the coaches of males who believed that there is a difference, almost half (42.9%) thought the differences were accounted for in current strength training practices. Among the coaches of females who thought there were differences, most (57.1%) thought the differences were accounted for.

A common theme noted from most coaches was that there is a difference in approach because of physiological make up and injury tendencies of male and female athletes. Some coaches believed that these differences were not always accounted for in the high school fitness programs because of time constraints, knowledge of the teachers, and demographics and skill variations within each class. Some coaches said that differences were accounted for and that sometimes it was less of a gender difference than it was a sport or level of skill difference.

One coach of male athletes who believed there is a difference in approach, who was a head coach of males and an assistant coach of females, was concerned that “girls are not challenged to work as hard as the boys, perhaps due to the perception girls are to be ‘dainty’ and not to sweat too hard.” With that noted, a coach of female athletes

continued to comment that male athletes are often times pushed more to participate in high school fitness programs either in strength training with coaches or physical education classes for athletes. A coach of female athletes stated, “I wish I could get more of my athletes involved in a good program. I am not sure that I have serious enough athlete to do that.” Another coach of female athletes expressed their belief, “I believe that although strength training would help some athletes, the majority of them do not have a strong enough skill base to warrant serious strength training.” All four coaches of female athletes who commented on this question concluded that female athletics are not as important or serious as male athletics.

Coaches of male athletes stated that the individuals who design and implement high school strength training program, no matter who they are, should be certified and educated in athletic strength training.



## CHAPTER FIVE: DISCUSSION

The most important findings in this research were that: (a) the majority of coaches (84.3%) provided strength training opportunities for their athletes and they are using somewhat typical activities for their programs (see Table 2); (b) physical education teachers (40.7%) and head coaches (25.9%) conducted most of the programs; and, (c) some gender differences existed in terms of who designed and implemented programs, whether or not the programs were required, and how often training was performed.

It was satisfying that the majority of coaches are providing opportunities for the high school athletes to strength train. This opportunity of strength training is not surprising because research suggests that strength training has a profound benefit on athletic performance (Mannie & Vorkapich, 2007). When strength training is combined with other types of activities such as plyometrics, dynamic warm ups, or speed training, the benefits increase exponentially (Channell & Barfield, 2008; Santos & Jameira, 2008; Twist & Hutton, 2007; Willoughby, 1990). Therefore, it is positive that the majority of high school athletes in these Southern Idaho districts and sports surveyed are providing strength and conditioning opportunities for their athletes. To date, there are no national or state-wide databases that track information on strength training practices. Clearly, this study demonstrates a need to track strength training practices at the high school level.

Unfortunately, this study was not able to discern whether or not these programs are safe and/or successful. Most physical education teachers have coursework and experience relative to designing, implementing, and evaluating strength and conditioning programs, however coaches have various levels of background and training (Duehring & Ebben, 2010). One coach stated, “As a coach I have to trust that the people hired for the fitness job are educated to train my athletes right.” Another coach added, “all strength training teachers should be certified by a nationally recognized organization.” Due to the constant influx of new conditioning strategies and programs, it is helpful for coaches and teachers to pursue credentials and/or certifications in the area of strength and conditioning. This should enable professionals in this area to have a wider array of knowledge compared to individuals without physical education or exercise science degrees, credentials or certifications. While studies exist that track the safety and effectiveness of college-level programs, few studies exist that track the safety and effectiveness of programs at the high school level, especially with female athletes.

Individuals who design and implement strength training programs for varsity athletes in the Southern Idaho Conference possess a wide range of education, credentials, and experience. No previous research has been done in this area so it is difficult to make a comparison of our results to any previous research.

It was not surprising that physical education teachers and coaches are providing the majority of design and instruction in strength training and conditioning for both male and female high school athletes. The Boise Independent School Districts Athletic Director stated that schools typically offer an “accelerated” physical education class for athletes. An “accelerated” physical education class is a class that provides advanced

skills, concepts, and activities to students because of the advanced physical/athletic abilities of the student. In many cases, the students have to be playing a sport during the semester they are enrolled in the class. “Accelerated” physical education is also referred to as Athletic Fitness class and Advanced Physical Education class. With that said, two coaches were concerned that their specific school did not offer this type of class for their athletes and a coach of female athletes had the concern that there is a bigger push for male athletes than female athletes to get into these classes. Research conducted by Twist and Hutton (2007) determined that team coaches, not professionals, are typically responsible for designing and implementing high school strength training programs.

Perhaps the most interesting findings from this study are that there are gender differences in the strength training programs in Idaho’s high schools. Specifically, gender differences were found in who designed and implemented programs, whether or not the programs were required, and how often training was performed. Coaches of soccer, basketball, and baseball/softball in the Southern Idaho Conference were more likely to know the education level, certifications, and years of experience of their strength training coach if they coached male athletes than if they coached female athletes. This lack of knowledge about strength training coaches’ background may indicate the low priority placed on strength training for coaches of female athletes. In addition, compared to their female counterparts, male athletes had more qualified individuals designing and implementing their programs, were more likely to strength train year round and train using more sessions per week. This is in agreement with studies conducted at the collegiate level (Marinez, 2004; Poiss et al., 2004; Todd et al., 1991).

It was interesting that strength training coaches of female athletes, when their qualifications were known, had more years of experience than coaches of male athletes. In contrast, strength training coaches of male athletes tended to have higher levels of education and were more likely to have certifications than coaches of their female counterparts (although in many cases, the credentials and qualifications of coaches of female athletes were not known). This finding could point to the trend in this sample toward hiring high school strength training coaches for male sports who have higher levels of education and more certifications. It is also possible that strength training coaches of male athletes are more likely to pursue higher levels of education and certification after they are hired in an effort to enhance their skills in the highly competitive world of male high school sports. It was somewhat encouraging to note that such a large percentage of strength training coaches for Idaho male high school sports sought certifications and enhanced education. It was also encouraging to note that coaches of both male and female sports sought continued education through workshops and other training. Perhaps a key to improving both male and female high school sports in Idaho is to educate athletic directors, principals, and others in charge of hiring as to the importance of hiring individuals for strength and conditioning who have appropriate training, whether in the form of academic degrees, credentials, experience, or certification.

Findings that strength training was less likely to be required for girls than boys and the fact that female teams conducted less strength training than their male counterparts is disconcerting. One coach of female athletes explained the belief that basketball players at high levels “got to such a high level through playing the sport as

opposed to strength training.” However, findings from this study concurred with the results of Poiss et al. (2004), who determined that coaches of male athletes are more likely to require strength training than coaches of female athletes. Poiss et al. (2004) also concluded that adolescent male athletes believed only male athletic performance could be improved with strength training whereas female athletes believed that female and male athletic performances could benefit, which indicates that traditional gender identities exist at all levels. Another finding to note, which could play a huge role as to why coaches of male athletes are more likely to require their athletes to strength train, is that most coaches of male athletes have participated in the sport they coach at the high school level (18.7%) and at the high school and college level (81.3%). These coaches of male athletes know what it takes to compete at the high school and collegiate level in their sport whereas it is possible that fewer coaches of female athletes participated in the sport they coached in high school (28.6%) and in high school and college (35.7%), so fewer coaches promote the benefit of strength training for their female athletes.

Given the health and performance benefits of strength training (Ashmore, 2003; Faigenbaum, 2000a; Faigenbaum et al., 2009; Zatsiorsky & Kraemer, 2006), it is unclear why female teams emphasize this important aspect of athletic success less than male teams. It is possible that factors such as traditional gender identities, the fear of young female athletes “bulking up,” and the lack of female role models who know and understand the importance of strength training for both genders is impeding progress in strength and conditioning for female athletes. However, because we didn’t specifically test this hypothesis, these concepts need further exploration.

Another interesting finding was that coaches of male athletes viewed strength training differently than coaches of female athletes. The majority of coaches of male athletes (60%) think there are no gender differences in approaches to strength training whereas the majority of coaches of female athletes (85.7%) think there is a gender difference. Coaches' ideas of gender differences in approach could impact female athletes significantly because there may be a big difference between results, adherence, and participation in female athletes who are being coached by strength coaches who understand these differences compared to those who don't understand the differences. One coach even stated that "girls are not asked to work as hard as boys in the same sport." According to Faigenbaum (2000b), improvements in physique, body composition, and physiological responses are three of the main differences between males and females that need to be considered when designing and implementing strength training programs. In this study, coaches of female athletes were well aware of a possible difference in approach to designing and implementing programs whereas less than half of coaches of male athletes were aware of these potential differences. Because so little research exists in this area (e.g., gender differences in approaches to strength training), there is a need to expand the research base and educate individuals responsible for strength training with both males and females.

Although several novel findings were reported, this study is not without limitations. The sample size was small, it was not random, and it was representative only of the largest school districts in the Southern Idaho Conference of Idaho in three sports. Additionally, the reliability of the questionnaire was not established.

Despite limitations, the response rate of the schools that were eligible to participate was high (>70%), the distribution of coaches of male and female sports was relatively equal, and the findings are novel. In the future, it would be beneficial to expand the survey to the entire state using a random sample of coaches and a questionnaire for which reliability has been established in a larger number of sports. It would also be interesting to examine whether strength training practices differ based on the size of the school (e.g., 5A versus 1A), different sports, or across conferences throughout the state and nationally. As suggested previously, it would be interesting to expand this study not only throughout the state of Idaho, but also throughout the United States and other areas of the world. If individuals with higher levels of experience, education, and credentials at the high school level are providing programs, athletic success should increase, and high rates of overuse, overtraining, and burnout may be prevented. By making a case for using credentialed individuals in strength training, and using data to support this premise, additional policies and procedures could be implemented, which would enhance the reputation of our field and perhaps provide additional job opportunities for credentialed individuals. Making some changes in the education and perspective of administrators responsible for hiring these individuals, both male and female athletes could benefit—both in terms of reduced injury rate and enhanced performance (Faigenbaum, 2000a; Faigenbaum, 2000b; Vaughn & Micheli, 2008; Zatsiorsky & Kraemer, 2006).

In conclusion, this study helped to shed some light on the strength and conditioning practices and credentials of coaches of female and male sports in the largest districts in Idaho for three major sports. The most important findings were who the

individuals were that designed and implemented strength training programs for high school athletes, including what credentials and experience they possess, and the gender differences that exist in the time commitment and qualified designer and instructor. These findings indicate that there is a need for further research into high school athletic strength training programs and the gender differences related to these topics. If researchers can study this more in-depth, possible criteria for high school strength training personnel, design, implementation, and evaluation can be provided to state athletic associations, school districts, athletic directors, and coaches.



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## APPENDIX A

**Questionnaire**

APPENDIX B

**Recruitment Letter and Survey Link**

## RECRUITMENT LETTER AND SURVEY LINK

I am a graduate student at Boise State University in the Kinesiology department and I am currently working on my thesis which examines the individuals responsible for designing and implementing varsity high school strength training programs in Idaho. My thesis has been approved by the BSU's review board, as well as each individual school district, Principle and Athletic Director. With that said, I would like to encourage your participation as a Head Varsity Coach of soccer, basketball, or baseball/softball. I ask that the willing coaches fill out an online survey that should take no longer than 20 minutes. The survey asks about your strength training program for your varsity athletes and thoroughly reviews who the individuals are who *design* and *implement* the programs as well as their education, certifications, and/or credentials. I will collect survey data for up to 4 weeks and for those coaches who participate, I will provide a summary of the study results. If you have any further questions, comments or concerns please do not hesitate to contact me.

I have attached the link to the survey: <https://www.surveymonkey.com/s/CPTPJL3>

Please take 20 minutes and complete this survey as soon as possible so you don't have to hear again from me! Thank you for your cooperation!!

Each coach has been assigned a code number to ensure once you have completed the survey you will not be contacted again until the study results summary. Please enter this number in the answer space to the first question. Your number is #.

Monica Reynolds  
[monicareynolds1@u.boisestate.edu](mailto:monicareynolds1@u.boisestate.edu)  
(208)371-1545

**APPENDIX C**

Follow-up Email and Final Email



## FOLLOW-UP EMAIL

Again, my name is Monica Reynolds, a graduate student from Boise State University in the Kinesiology department. I am following up on the previous email I have sent you with a link to the survey for my thesis project. If you have not done so yet, please take 20 minutes and complete the survey.

The survey asks about your strength training program for your varsity athletes and thoroughly reviews who the individuals are who *design* and *implement* the programs as well as their education, certifications, and/or credentials. I will continue collecting survey data for up to 3 more weeks and for those coaches who participate, I will provide a summary of the study results. If you have any further questions, comments or concerns please do not hesitate to contact me.

I have attached the link to the survey: <https://www.surveymonkey.com/s/CPTPJL3>

Please take 20 minutes and complete this survey as soon as possible so you don't have to hear again from me! Thank you for your cooperation!!

Each coach has been assigned a code number to ensure once you have completed the survey you will not be contacted again until the study results summary. Please enter this number in the answer space to the first question. Your number is **#10**.

Monica Reynolds  
[monicareynolds1@u.boisestate.edu](mailto:monicareynolds1@u.boisestate.edu)  
(208)371-1545

## FINAL EMAIL

This is the final email notification to participate in a thesis survey about the individuals responsible for designing and implementing strength training programs for Idaho varsity high school athletes. The survey will be open until **Thursday**, Feb. 18, at **midnight**. If you have not done so yet, please take 20 minutes and complete the survey.

If you have any further questions, comments or concerns please do not hesitate to contact me. Thank you for your cooperation!!

I have attached the link to the survey: <https://www.surveymonkey.com/s/CPTPJL3>

Each coach has been assigned a code number to ensure once you have completed the survey you will not be contacted again until the study results summary. Please enter this number in the answer space to the first question. Your number is **#10**.

Monica Reynolds  
[monicareynolds1@u.boisestate.edu](mailto:monicareynolds1@u.boisestate.edu)  
(208)371-1545