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Halftime Hydration and Snacking Practices in Collegiate and Professional Basketball and Football Players

Desiree L. Nathanson
Georgia State University

HALFTIME HYDRATION AND SNACKING PRACTICES IN COLLEGIATE AND PROFESSIONAL BASKETBALL AND FOOTBALL PLAYERS

By

DESIREE L. NATHANSON

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ACCEPTANCE

This thesis, HALFTIME HYDRATION AND SNACKING PRACTICES IN COLLEGIATE AND PROFESSIONAL BASKETBALL AND FOOTBALL PLAYERS, by Desiree L. Nathanson, was prepared under the direction of the Master's Thesis Advisory Committee. It is accepted by the committee members in partial fulfillment of the requirements for the degree Master of Science in the College of Health and Human Sciences, Georgia State University.

The Master's Thesis Advisory Committee, as representatives of the faculty, certify that this thesis has met all standards of excellence and scholarship as determined by the faculty.

_____
Dan Benardot, Ph.D, R.D., L.D., FACSM
Committee Chair

_____
Vijay Ganji, Ph.D, R.D.
Committee Member

_____
Walter R. Thompson, Ph.D, FACSM, FAACVPR
Committee Member

_____
Date

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Desiree L. Nathanson
2430 Cheshire Bridge Rd. NE #305
Atlanta, GA 30324

The director of this thesis is:

Dan Benardot, Ph.D, R.D., L.D., FACSM
Division of Nutrition
College of Health and Human Sciences
Georgia State University
Atlanta, Georgia 30303-3083

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VITA

Desiree L. Nathanson

EDUCATION:

2002	Bachelor of Science in Public Relations University of Florida
2010	Master of Science with concentration in Nutrition Georgia State University

PROFESSIONAL EXPERIENCE:

July 2008 – Present Dance/Fitness Instructor
Dance 101, Atlanta, GA

Jan. 2008 – Dec. 2009 Graduate Assistant
Division of Nutrition, Georgia State University, Atlanta, GA

PROFESSIONAL SOCIETIES AND ORGANIZATIONS:

2008-Present American Dietetic Association

2008-Present Georgia Dietetic Association

2010-Present National Exercise & Sports Trainers Association

2007-2010 Nutrition Student Network

ABSTRACT

Background: Sustaining a hydration state and energy status during competition is important for athletes, yet there is no current evidence in the literature that halftime hydration and snacking practices of basketball and football players have been assessed. Under ideal circumstances, proper hydration and food consumption practices should be followed by basketball and football players before, during and after practices and competitions because both sports involve a fast rate of energy utilization with a concomitant increase in sweat production.

Objectives: This study aimed to improve our understanding of the halftime hydration and snacking practices used by basketball and football players at the collegiate and professional levels.

Methods: A total of 122 subjects filled out a halftime habits survey. The survey was completely anonymous to protect the identity of the athletes participating in the study. Athletic trainers and coaches of basketball and football teams, athlete agents, other athletic team employees, and players were contacted and provided with copies of a questionnaire to distribute to athletes. Data were analyzed using PASW Statistics 18. Data for height and weight were analyzed using descriptive statistics and all remaining data were analyzed using crosstabs and included a Chi Square Test.

Results: Of the beverages consumed by the 122 athletes surveyed, there was a statistically significant difference between sports in the consumption of Gatorade ($n=89$, $p=.045$), Powerade ($n=41$, $p<.001$), Powerade Zero ($n=1$, $p=.020$), and water ($n=96$, $p=.049$). There was a statistically significant difference between sports in the consumption of energy bars ($n=62$, $p<.001$) and fresh fruit ($n=41$, $p=.033$). There was a statistically significant difference between sports in the purchase of snacks for halftime ($p=.004$) and the frequency of halftime snacking habits ($p<.001$). There is a statistically significant difference between sports in the halftime recommendations of teams for both hydration ($p<.001$) and snacking ($p<.001$). There is a statistically significant difference between sports in the availability of snacks at halftime ($p<.001$) and the preferability of snacks available at halftime ($p<.001$). There is a statistically significant difference between sports in temperature's influence on what athletes drink at halftime ($p<.001$) and humidity's influence on what athletes drink at halftime ($p<.001$). There is a statistically significant difference among sports in the influence of pre-game drinking practices on halftime hydration habits ($p=.046$) and the influence of first half drinking practices on halftime hydration habits ($p=.035$). There is a statistically significant difference among sports in the extent of weight lost during a game ($p<.001$).

Conclusions: The results of this study show that athletes have the time and resources to drink and snack at the halftime break to replenish glycogen stores and rehydrate for the second half of games. Athletes, whether by recommendation or by habit, consume a variety of beverages and snacks during the halftime break of games. It is still uncertain as to whether or not these hydration and snacking habits actually replenish glycogen stores and rehydrate the athletes for the second half of games. Future studies should be done to determine whether the hydration and snacking habits are maintaining hydration and sustaining blood glucose for better performance.

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ABBREVIATIONS

NCAA	National Collegiate Athletic Association
NBA	National Basketball Association
NFL	National Football League
GSSI	Gatorade Sports Science Institute
ACSM	American College of Sports Medicine
ADA	American Dietetic Association
DC	Dietitians of Canada
NATA	National Athletic Trainers' Association
TBW	total body water
AVP	arginine vasopresin
ALD	aldosterone
HEX	exertional heat exhaustion

CHAPTER ONE

INTRODUCTION

It is important for athletes, including coaches, strength and conditioning trainers, athletic trainers and dietitians, to understand the negative performance and health effects of poorly hydrated and poorly 'energized' (i.e., deficient in energy) athletes (Volpe, et al. 2009). Sustaining a hydration state and energy status during competition is important, yet there is no current evidence in the literature that halftime hydration and snacking practices of basketball and football players have been assessed. This study aimed to improve our understanding of the practices used by these athletes at the collegiate and professional levels. Ultimately, this information will provide the basis for recommendations that target the weaknesses of current practices.

Under ideal circumstances, proper hydration and food consumption practices should be followed by basketball and football players before, during and after practices and competitions because both sports involve a fast rate of energy utilization with a concomitant increase in sweat production. These team sports require athletes to switch intermittently between maximal-effort and low-intensity exercise, which could potentially cause large losses of body water (Volpe, et al. 2009). Fatigue occurring during prolonged exercise in cool or temperate conditions is associated with depletion of carbohydrate in the liver and muscles (Below, et al. 1995). In addition, both sports have scheduled halftime breaks that represent an important opportunity for replenishment of both energy and fluids. Taking optimum advantage of this replenishment opportunity should sustain or improve athletic performance, reduce muscle soreness, lower risk of hydration-related heat illness, and reduce sports-related injury risks that may be related to low blood sugar disorientation.

This study assessed the halftime hydration and snacking habits utilized by collegiate and professional basketball and football players, and has the following hypotheses:

Hypothesis 1: Athlete's halftime hydration practices do not contribute to sustaining a desirable hydration state.

Null Hypothesis 1: Athlete's halftime hydration practices theoretically sustain a desirable hydration state.

Hypothesis 2: Athletes do not follow halftime snacking practices that theoretically improve athletic performance during the second half.

Null Hypothesis 2: Athletes do follow halftime snacking practices that theoretically improve athletic performance during the second half.

CHAPTER TWO

REVIEW OF LITERATURE

A failure to take advantage of the half-time period to hydrate and snack could predispose athletes to heat-related illnesses, decreased performance, increased risk of injury and, possibly, death (Coris, et al. 2004). All of these factors warrant a careful evaluation of halftime replenishment practices to provide a basis for recommendations that could improve athlete awareness of strategies for reducing health risks and enhancing performance. It is important for athletes to meet energy and macronutrient needs, especially carbohydrate and protein, during times of high physical activity to maintain body weight, replenish glycogen stores, and provide adequate protein to build and repair tissue (Joint Position, 2009).

Recommendations for Halftime Hydration and Snacking

Athletes from the National Collegiate Athletic Association (NCAA), National Basketball Association (NBA), and the National Football League (NFL) were surveyed for this study. The NCAA is a voluntary organization through which the nation's colleges and universities govern their athletics programs (http://www.ncaa.org/). There are currently 1,055 schools in the NCAA that are considered to have an active membership. Of those schools, 633 have football teams, 1,041 have men's basketball teams, and 1,063 have women's basketball teams. There are currently 30 teams in the NBA (http://www.nba.com) and 32 teams in the NFL (http://www.nfl.com).

National Collegiate Athletic Association

The NCAA has published recommendations for hydrating and snacking before, during and after exercise (NCAA 2006-2007 Sports Medicine Handbook), but provides no specific recommendations or strategies for halftime replenishment during basketball and football games. Fluid replacement should be readily available for athletes to avoid dehydration and other heat-related illnesses. The NCAA recommends water as a cost effective, quickly absorbed and well tolerated fluid for prehydration and rehydration. Sports drinks with appropriate carbohydrates and sodium are recommended for prolonged continuous activity of greater than 45 minutes, extremely intense activity with risk of heat injury, and extremely hot and humid conditions. During exercise, the NCAA recommends that student-athletes consume 4-8 ounces of beverage every 15 minutes, alternating between water and sports drinks. The NCAA also recommends that student-athletes consume 30-60 grams of carbohydrates per hour, 5-10 ounces of sports drink every 15-20 minutes, or 2 carbohydrate gels (typically composed of glucose polymers) per hour.

Gatorade Sports Science Institute

The Gatorade Sports Science Institute (GSSI) offers recommendations on the amount and timing of fluid and carbohydrate during exercise to prevent dehydration and compromised athletic performance (Burns, et al. 2001). The GSSI recommends 3 ml/kg of body weight (7-10 ounces) every 15 minutes during exercise for better physical and mental performance during an athletic contest. A concentrated 18% carbohydrate drink (GatorLode, 5 ml/ kg body weight or about 12 ounces for a 150-lb player) during a 20-minute "half-time" break is also recommended to speed up the replacement of muscle glycogen. Athletes should consume 30-60 grams of carbohydrate per hour in the form of glucose, sucrose, or starch. Individualization of beverages

and drinking schedules are stressed. This can be achieved by the consumption of sports drinks or food. The primary purpose of carbohydrate ingestion during strenuous exercise lasting longer than one hour is to maintain a sufficient concentration of blood glucose and to sustain a high rate of energy production from blood glucose and glycogen stored in muscles (Coggan, et al. 1991; Coyle 1994; Coyle, et al. 1986).

Gatorade and the NFL provide recommendations for the prevention of dehydration and other heat-related illnesses through their campaign "Beat the Heat" (Gatorade Heat Safety Package 2009). However, this campaign is geared towards educating parents and coaches of young football players on heat-related illnesses and the importance of hydrating. "Beat the Heat" guidelines recommend frequently scheduled and enforced drink breaks and consumption of sufficient beverage volume to match sweat losses that occur during workouts and competitions. Flavored, cold, lightly salted sports beverages should be offered to encourage voluntary fluid replacement by players. Recommendations given in the "Beat the Heat" simply state "lightly salted" and do not specify exact amount of salt. Players should have unrestricted access to appropriate fluids during activity. "Beat the Heat" states that sports drinks may provide some benefit over water because they also contain carbohydrates and electrolytes, but reference no studies to support this statement.

Other than the "Beat the Heat" campaign, the NFL offers no recommendations for proper hydration as an athlete in the NFL. The NBA provides *no* guidelines for sustaining the optimal hydration and energy levels of its athletes.

Positions of Professional Health Practitioner Organizations

According to the positions of the American College of Sports Medicine (ACSM), the American Dietetic Association (ADA), and the Dietitians of Canada (DC) athletes should hydrate before, during and after exercise (Joint Position, 2000; Joint Position, 2009; Position Statement, 2007), but no specific recommendations for strategies for halftime replenishment during basketball and football games are given. Individuals may begin exercising in a dehydrated state if intervals between exercise (practices and games) are inadequate for full rehydration. Basketball and football teams will often hold twice daily training during the week, causing athletes to carry a fluid deficit from the first practice into the second practice. The ACSM states that the goal of drinking during exercise is to prevent a state of excess dehydration (>2% body weight loss from water deficit) and excessive changes in the balance of electrolytes to prevent negative effects on performance. Dehydration >2% body weight degrades aerobic exercise and cognitive/mental performance in temperate-warm-hot environments (Casa, et al. 2005; Cheuvrant, et al. 2003; Cheuvrant & Sawka 2005; Panel on DRI, 2005). Greater levels of dehydration will further degrade aerobic exercise performance (Cheuvrant & Sawka 2005; Panel on DRI, 2005). The magnitude of performance decrement is related to the environmental temperature, exercise task, and probably the subject's unique biological characteristics (physical fitness, acclimatization state, tolerance to dehydration) (Panel on DRI, 2005). Cognitive/mental performance, which is important where concentration, skilled tasks and tactical issues are involved, is also degraded by dehydration (Cheuvrant & Sawka 2005; Hancock & Vasmatzidis 2003; Rodahl 2003).

Dehydration can compromise athletic performance and increase the risk of exertional heat injury (Position Statement, 2000). Dehydration of 3% body weight is common in sports and

can be elicited in just an hour of exercise or even more rapidly if the athlete enters the exercise session dehydrated. Dehydration can affect all physiologic systems in the human body.

National Athletic Trainers' Association

The National Athletic Trainers' Association (NATA) recommends that sufficient fluids be consumed to offset the rate of water loss via sweating or progressive dehydration will occur (NATA Position Statement, 2000). A proper hydration protocol is specific to the unique features of each sport. If opportunities to rehydrate during an event are frequent, such as baseball, football, and track and field, the athlete can ingest smaller volumes of fluid based on their sweating rate and environmental conditions. If rehydration must occur at specific times during an event, such as soccer and long distance running, then the athlete must ingest fluids to maximize hydration within the sport's confines and rules. Fluid replacement should be close to sweat and urine losses and maintain hydration at less than 2% weight reduction; this requires 200-300 mL every 10 to 20 minutes. If carbohydrates are included in a fluid, the concentration should be 4%-8%, a concentration any higher than that will slow the rate of fluid absorption (NATA Position Statement, 2000; Sawka & Coyle, 1999).

Hydration Specific to Sport

A variety of factors influence sweat losses in physically active individuals, including the duration and intensity of exercise, the environmental conditions and the type of clothing/equipment worn (Ray, et al., 1998). These factors are sometimes specific to the sport including an air conditioned indoor stadium versus an outdoor stadium or the type of uniform

worn. There is considerable variability in exposure to the factors that contribute to sweat rates between participants of different sports.

Individual characteristics, such as body weight (Barr & Costill, 1989; Ray, et al., 1998), genetic predisposition, heat acclimatization state (Ray, et al., 1998; Seto, 2005) and metabolic efficiency (economy at undertaking a specific exercise task) will influence sweat rates for a particular activity (Ray, et al., 1998). As a result of factors relating to individuals and the individual sports, there is a large range in sweat rates and total sweat losses of individuals between and within activities. For example, sweat rates vary between players in a soccer match according to the position and playing style of the player, as well as the total time spent on the field (Ray, et al., 1998; Tsintzas & Williams, 1998). American football players have greater daily sweat losses than cross country runners who are training in the same environment for the same duration (Godek, et al., 2005; Ray, et al., 1998). Football players have a larger body mass, and wear protective clothing, whereas cross country runners have a smaller body mass and lighter clothing. Some sports, such as tennis, may allow for frequent drinking opportunities whereas other sports, such as soccer may not (Maughan & Shirreffs, 2008).

A study conducted by Osterberg et al. 2009 found that half the NBA players (n=29) that participated in the study began the game in a hypohydrated state, as indicated by urine specific gravity, with pregame urine specific gravity levels greater than 1.020. The NATA recommends that athletes begin activity with a USG at or below 1.020 to ensure adequate hydration (Position Statement, 2000; Osterberg, et al., 2009). Furthermore, sweat losses in these players during games were substantial (greater than 2 L in approximately 20 minutes of playing time).

The development of an individualized hydration strategy is essential to protect health and preserve performance of athletes as no single recommendation works for everyone (Maughan & Shirreffs, 2008).

Assessing Hydration Status in Athletes

Early signs and symptoms of dehydration include thirst and general discomfort (Position Statement, 2000). Hydration status can be assessed by measuring body weight before and after exercise sessions, monitoring urine color, urine specific gravity or urine volume, or a combination of these factors (Armstrong, et al., 1998; Armstrong, et al., 1994; Position Statement, 2000).

When sweat losses produce a body water deficit, the reduced volume of body fluids contains a greater than normal concentration of dissolved substances such as sodium and potassium; this is known as hypertonic hypovolemia (Cheuvrant & Sawka, 2005).

Young, healthy men undergoing daily exercise and heat stress maintain a stable body mass when measured first thing in the morning as long as they make a conscious effort to replace sweat lost during exercise (Cheuvrant, et al., 2004; Cheuvrant & Sawka, 2005). Voluntary intakes of food and fluid compensate for sweat losses incurred with regular exercise, resulting in a stable daily body mass (Cheuvrant & Sawka, 2005; Leiper, et al., 2001). Body mass is often used to assess the rapid changes of athlete hydration in both laboratory and field environments (Cheuvrant & Sawka, 2005). Body mass is commonly used to assess dehydration that occurs over a period of 1-4 hours, with or without exercise (Armstrong, 2005; Kavouras, 2002). When body mass is used to represent water loss, the following three factors should be considered:

1. In clinical and athletic settings, a baseline body mass is required but not often available (Armstrong, 2005; Kavouras, 2002).

2. Body mass fluctuates daily (0.51 ± 0.20 kg). Therefore, three consecutive measurements provide an accurate assessment of daily body mass variability in active men who replace 100% of sweat lost during exercise (Armstrong, 2005; Cheuvrant, et al., 2004).

3. If body mass measurements are performed over several weeks or months, this technique cannot be interpreted because the gain or loss of adipose tissue is unknown unless precise whole-body scans are available to interpret changes in fat mass (Armstrong, 2005).

When an individual sweats, plasma volume and extracellular water decrease because they provide the fluid for sweat, and plasma osmolality increases because sweat is hypotonic relative to plasma (Cheuvrant & Sawka, 2005). In other words, sweat removes relatively more water from body fluids than solutes like sodium and chloride, and these osmotically active solutes build up in the blood plasma.

The combination of total body water (TBW) and plasma osmolality provides the "gold standard" for hydration assessment (Cheuvrant & Sawka, 2005). TBW entails measuring the dilution of trace amounts of an isotope; a known volume of concentration of isotope is taken into the body, and a new concentration of the isotope is later determined in a sample of body fluid after the tracer has become distributed equally throughout the body fluids. The unkown volume (TBW) is then calculated, knowing that a low concentration of isotope in the sample means that the body fluid volume must be relatively large and vice versa (Cheuvrant & Sawka, 2005). Plasma osmolality is controlled around a euhydration set point of ~285 mOsm/kg (Osterberg, et al., 2009). If exercise sweat losses are not replaced, then body water volume is reduced

(Cheuvrant & Sawka, 2005). Plasma volume and extracellular water decrease because they provide the fluid for sweat, and plasma osmolality increases because sweat is hypotonic relative to plasma. Sweat removes relatively more water from body fluids than solutes like sodium and chloride, and these osmotically active solutes build up in the blood plasma. The increase in plasma osmotic pressure is proportional to the decrease in TBW (Osterberg, et al., 2009). It should be noted that plasma volume decreases proportionally with the level of dehydration, but this magnitude of change is markedly less in heat-acclimatized athletes (Cheuvrant & Sawka, 2005; Sawka & Coyle, 1999)

Normal body water turnover in a sedentary adult is from 1 to 3 L/day, the range accountable primarily to differences in insensible water loss, or the evaporation of moisture from the skin (Cheuvrant & Sawka, 2005; Sawka, et al., 2005). Large variations of fluid intake are controlled by the kidneys, which can produce more or less urine, depending on changes in body fluid volumes (Cheuvrant & Sawka, 2005). Urine is a solution of water and various other substances, and the concentration of those substances increases with a reduction in urine volume, which is associated with dehydration. It appears that changes in plasma osmolality that stimulate endocrine regulation of the reabsorption of renal water and electrolytes are delayed at the kidney when acute changes in body water occur (Cheuvrant & Sawka, 2005; Position Statement, 2007). It is also likely that drink composition influences this response (Cheuvrant & Sawka, 2005). If renal function is normal, urine is concentrated and scant when the body is dehydrated and conserving water, or is dilute and plentiful when a temporary excess of body water exists (Armstrong, 2005).

Thirst can be used to assess hydration status when instrumentation or technical expertise is unavailable (Armstrong, 2005). The sensation of thirst can indicate the threshold of

hypohydration (total body water losses equal to 1% or 2% of body mass) (Armstrong, 2005; Greenleaf & Morimoto, 1996; Hubbard, et al., 1990). Thirst can be measured using a scale ranging from 1 (not at all thirsty) to 9 (very very thirsty); the scale was developed by Young et al. (Armstrong, 2005; Young, et al., 1987). Between a score of 3 (a little thirsty) and 5 (moderately thirsty), it can be assumed that an individual is mildly dehydrated (Armstrong, 2005; Young, et al., 1987). Factors that can alter the perception of thirst include fluid palatability, time allowed for fluid consumption, gastric distention, older age, gender and heat acclimation status (Armstrong, 2005; Greenleaf & Morimoto, 2006; Hubbard, et al., 1990; Ormerod, et al., 2003; Osterberg, et al., 2009).

The fluid regulatory hormones arginine-vasopresin (AVP) and aldosterone (ALD) generally respond predictably to changes in body fluid volume and osmolality, but the hormones are easily altered by exercise and heat acclimation and require more expensive and complicated analysis techniques (Francesconi, et al., 1983; Montain, et al. 1997). Montain, et al. 1997 concluded that: 1) ALD and AVP increase in a graded manner with hypohydration, and this effect persists during exercise-heat stress; 2) ALD and AVP increases elicited by exercise are greater during high intensity than low intensity exercise; 3) Hypohydration and exercise intensity have additive effects on ALD: and 4) AVP responses are closely coupled to osmolality (Coris, et al., 2004; Montain, et al., 1997).

Armstrong (Armstrong, 2005) states that urine specific gravity, urine color, and body mass best meet the requirements of safety, accuracy and low cost. The National Athletic Trainers' Association position statement (Position Statement, 2000) recommends that three techniques be used to assess the hydration status of athletes: body weight change, urine specific gravity and urine color.

Hydration Issues During Competition and Practice

All physiologic systems in the human body are influenced by dehydration (Position Statement, 2000). The intent of drinking during exercise is to avert a body fluid deficit in excess of 2% body weight (Joint Position, 2009). A weight loss of greater than 3% during physical activity is associated with dehydration, decreased muscular strength and endurance, decreased plasma blood volume, compromised cardiac output, impaired thermoregulation, decreased kidney blood flow and filtration, decreased liver glycogen stores and a loss of electrolytes (Howe & Bowden, 2007). Thirst is not usually a good indicator of hydration status because it is typically not apparent until a person has incurred a water deficit of approximately 2% weight loss and when an athlete becomes thirsty it is often too late to prevent dehydration (Sawka & Montain, 2000). Therefore, preventative measures that include water and sports drink consumption should be followed when exercising. Sports drinks containing sodium (0.1-0.2 g/cup) and potassium (0.2-0.5 g/cup) as well as carbohydrate, are recommended for athletes (Joint Position, 2009; Ray, et al., 1998). It is important for the individuals exercising to be aware of proper hydration techniques to avoid any heat-related illnesses that result from hypohydration (Sawka, et al., 1996).

Hyponatremia

Hyponatremia, a serum sodium concentration of less than 130 mmol/L, can occur from inappropriate, excessive fluid intake before, during, or after exercise (Howe & Bowden, 2007) or a failure to adequately replace salt-containing fluids (Joint Position, 2009). Athletes who suffer from hyponatremia typically consume more fluid (water) than they lose in sweat and gain weight

over the course of an event (Hew-Butler, et al., 2005; Howe & Bowden, 2007; Shireffs & Maughan, 1998). Hyponatremia most often occurs in athletes performing prolonged exercise lasting longer than four hours and who drink over-aggressively (Montain, et al., 2006). Most cases develop during participation in endurance events lasting eight hours or more.

Risk factors for hyponatremia include female gender, low body weight, and high availability of fluids (Howe & Bowden, 2007). The risk for developing hyponatremia also depends on both the magnitude of sodium dilution and the rate at which the water/electrolyte imbalance occurs (Androgué & Madias, 2000; Montain, et al., 2006). Severe hyponatremia (serum sodium <120 mmol/L) can precipitate seizures, coma and death (Howe & Bowden, 2007).

Sports drinks, instead of water or electrolyte-free drinks, can be consumed to slow down the development of hyponatremia (Montain, et al., 2006). The consumption of electrolyte-containing drinks or food should be considered as part of a preventative strategy, especially in athletes who secrete salty sweat. The consumption of electrolytes should only be used as part of the preventative process as it will slow the development of hyponatremia but not prevent it if fluid intake is greater than the sweating rate. Treatment of hyponatremia begins with oral sodium solutions if mild and progresses to intravenous hypertonic saline for severe cases (Howe & Bowden, 2007).

Thirst

Generally, thirst is not perceived until a person has incurred a water deficit of ~2% body weight loss (Sawka, et al., 1996). Although genuine thirst develops only after dehydration is present and is alleviated before euhydration is achieved, thirst is a useful symptom that draws

attention to the need for more structured drinking before, during, or after exercise (Cheuvrant & Sawka, 2005). However, 'thirst' is an ineffective means of discerning hydration state during physical activity (Sawka, et al., 1996). As a result, athletes relying on thirst may not realize that they are becoming dehydrated. It is important, therefore, for an asymptomatic hydration strategy to start prior to a practice or game competition, with easily accessible sports drinks available to athletes during exertion to *avoid* thirst (Howe & Bowden, 2007). Consumption of fluids in adequate amounts is critical for normal cellular function, and thermal regulation in athletes (Jones, et al., 2008).

Athletes need to practice fluid intake during activity just as they would practice a sport-specific skill (Coris, et al., 2004). Athletes should be encouraged to develop customized fluid replacement programs to ensure that they are consuming fluid to prevent excessive dehydration without risking hyponatremia (Montain, et al., 2006).

Beverages containing carbohydrates and electrolytes

The general consensus is that it is better to drink water than to drink nothing during prolonged exercise in a warm environment, but beverages with carbohydrate and electrolytes might promote better performance (Maughan & Shirreffs, 2008). The ingestion of a beverage containing carbohydrates and electrolytes may also help to offset body fluid losses from sweating during exercise in an attempt to attenuate the cardiovascular stress and hyperthermia associated with exercise-induced dehydration (Vrijens & Rehrer, 1999).

The type, intensity and duration of exercise as well environmental conditions will alter an individual's needs for fluids and electrolytes (Joint Position, 2009). Consumption of beverages containing electrolytes and carbohydrates can help sustain fluid and electrolyte balance and

endurance exercise performance (Joint Position, 2009; Ray, et al., 1998). Fluids that contain the electrolytes sodium and potassium help replace sweat electrolyte losses (Joint Position, 2009). Fluids that contain sodium stimulate thirst and fluid retention; body water restoration may be accelerated when subjects consume beverages containing higher sodium concentrations (Ray, et al., 1998; Rodahl, 2003). Increased sodium intake may be warranted during the first three to five days of heat exposure, since the increased thermal strain and associated increased sweat rate increase the sodium lost in sweat (NATA Position Statement, 2000). Salt loss does not have a direct impact on physical performance, but adequate replacement of sodium chloride during physical activity can help encourage responses that promote hydration including voluntary fluid intake (Murray, 2007; Passe, 2001), protection of plasma volume (Below, et al., 1995; Murray, 2007), and reduction of urine production (Murray, 2007; Vrijens & Rehrer, 1999). Beverages containing a 6-8% carbohydrate are recommended for events lasting longer than one hour (Joint Position, 2009; Ray, et al., 1998) and can provide energy (Joint Position, 2009).

Heat and Humidity

The risk for dehydration and heat injury increases dramatically in hot, humid environments (Joint Position, 2009; Ray, et al., 1998). Heat cannot be dissipated by radiation when the ambient temperature exceeds body temperature. The potential to dissipate heat by evaporation of sweat is substantially reduced when the relative humidity is high (Joint Position, 2009). Evaporation of sweat from the skin's surface assists the body in regulating core temperature (NATA Postion Statement, 2000). The sweat rate generally increases after 10-14 days of heat exposure, which in turn requires a greater fluid intake for a similar bout of exercise.

Exercise-Induced Dehydration

Exercise-induced dehydration develops because of fluid losses that exceed fluid intake (Joint Position, 2009). It is possible that some athletes may begin training or competing in a state of dehydration because the interval between training sessions is inadequate for full rehydration.

Heat-Related Illness

A failure to have strategies for sustaining the hydration state is likely to increase the prevalence of heat-related illnesses (Howe & Bowden, 2007). For avoidance of heat-related illness morbidity and mortality, early recognition and prompt intervention are important. There is every reason to believe that heat-related illness risk can be lowered with proper fluid replacement before, during and after exertion.

Sawka and Montain (Sawka & Montain, 2000) have found that sweat output commonly exceeds water intake during exercise in the heat, which can result in hypohydration and a loss of electrolytes that result in electrolyte imbalances. Dehydration usually occurs during exercise because of the unavailability of fluids or a disparity between thirst and water requirements, causing hypohydration over a prolonged period of exercise. Hypohydration lowers heat dissipation, resulting in an increase in heat storage, and reduces a person's ability to tolerate heat strain. Daily water losses can be substantial. It is, therefore, important to emphasize that both fluid and electrolyte balance are critical for the function of all organs and general health.

Jones et al. (Jones, et al., 2008) examined the effects of exercise-induced dehydration in a hot, humid environment on anaerobic muscular power using a test-retest (euhydrated and dehydrated) design. Seven subjects performed upper and lower body Wingate anaerobic tests

before and after a 1.5-hour recovery from a heat stress trial of treadmill exercise in a hot, humid environment until a 3.1 ± 0.3% body mass loss was achieved. The findings of this study suggest that dehydration of 2.9% body mass decreases the ability to generate upper and lower body anaerobic power. The authors state that it is important for coaches and athletes to understand that sports performance (including basketball and football performance) requiring anaerobic strength and power can be compromised by poor hydration, which may also contribute to an increased risk of injury.

Recent deaths of collegiate and professional athletes, including those that occurred in NCAA-affiliated teams and the NFL, have resulted in more focus on heat-related illnesses. Howe and Boden (Howe & Bowden, 2007) have reviewed the heat stroke literature and have concluded that it is preventable in all cases. One risk factor listed for heat stroke is dehydration, which can be prevented with the proper education of coaches, trainers and athletes in preventative hydration.

Coris et al. (Coris, et al., 2007) reported that heat illness is the third leading cause of death in athletics, following hypertrophic cardiomyopathy and congenital coronary anomalies (Maron, et al., 1996), and, whether mild or severe, an athlete's return to activity must progress cautiously with the gradual implementation of re-acclimatization to exercise. Hydration status must be monitored for return to play and to prevent subsequent exertional heat exhaustion. Heat illness symptoms should be recognizable by the athletic training staff to prevent serious damage to the athlete. Educational tools should be used to make athletes aware of how to monitor their own hydration status as well as the implementation of recorded weigh-ins and urine samples overseen by the medical staff.

Armstrong and Lopez (Armstrong & Lopez, 2007) found scientifically-backed guidance on the subject of return to activity following exertional heat exhaustion (HEX). HEX is the most common form of heat illness experienced by athletes. Dehydration that occurs from water and/or sodium deficiency and a high ambient temperature represents a high risk for HEX. It is possible for anyone, including athletes, to experience HEX during a period of prolonged exercise-heat stress if significant dehydration occurs. The authors state that "often, a patient displays chronic unwillingness, disregard or ignorance of the basic principles of rehydration and nutrition." Educating athletes in this area could help in preventing HEX from occurring.

Energy Issues

Optimum athletic performance is promoted by adequate energy intake. The amount of ATP present in the skeletal muscles is not sufficient to provide a continuous supply of energy (Joint Postion, 2009). Carbohydrate intake during exercise can delay the onset of fatigue and improve performance of prolonged exercise (Carter, et al., 2003; Coggan & Coyle, 1987; Jeukendrup, 2007). This is achieved by maintaining or raising plasma glucose concentrations and sustaining high rates of carbohydrate oxidation. Providing exogenous carbohydrates during exercise helps maintain blood glucose levels and improves performance (Joint Position, 2009). The consumption of a high-carbohydrate diet (>60% of energy) during the training period, may result in improved muscle glycogen concentrations and/or significant improvements in athletic performance. In long-duration exercise, a greater contribution of exogenous carbohydrate will spare liver glycogen, prevent a drop in blood glucose concentration, and help maintain the high rate of carbohydrate oxidation necessary to sustain exercise intensity (Jeukendrup, 2007).

For long duration events, the consumption of 0.7 g carbohydrate/kg of body weight an hour (approximately 30-60 g/hour) has been shown to extend endurance performance (Joint Position, 2000; Joint Position, 2009). This amount has also been shown to maintain blood glucose levels and sustain exercise performance (Joint Position, 2009; Ray, et al., 1998). This is consistent with Jeukendrup (Jeukendrup, 2007) as up to 50 grams of carbohydrate ingestion per hour is suggested for team sports. Carbohydrate intake should begin soon after the onset of activity; consuming a specified amount of carbohydrate as a bolus after two hours of exercise is not as effective as consuming the same amount at 15- to 20 minute intervals throughout the two hours of activity (Joint Position, 2000; Joint Position, 2009). With increasing exercise intensity, the active muscle mass becomes progressively more dependant on carbohydrate as a source of energy (Jeukendrup, 2007). The amount of carbohydrate an athlete should ingest during exercise should be developed on an individual basis, largely by trial and error to accommodate the individual athlete's needs.

Inadequate energy intake relative to energy expenditure compromises performance. With limited energy intake, fat and lean tissue will be used for fuel by the body (Joint Position, 2009). Oxidation of carbohydrate, fat, and protein leads to a loss of body mass independent of total body water (Montain, et al., 2006). Loss of lean tissue mass results in the loss of strength and endurance, as well as compromised immune, endocrine and musculoskeletal function (Joint Position, 2009).

Summary

It is important for athletes, coaches, dietitians, and trainers to be well educated on proper hydration, the prevention of dehydration and the treatment of heat-related illnesses. Athletes,

including basketball and football players, are at risk for dehydration every time they participate in a practice or game. Heat illness can manifest itself in multiple forms, ranging from mild disease to life-threatening heat stroke. More emphasis should be placed on proper hydration and snacking during practices and competitions to reduce athlete risk. It is difficult for coaches and trainers to monitor the hydration status of every athlete during practices and games, which makes it necessary for each athlete to understand proper hydration techniques. Greater focus on preventative dehydration education for athletes could ensure better performance and prevent injury and, in some cases, mortality. Basic guidelines should be developed to help athletes achieve an ideal state of hydration at the beginning of exercise, and to sustain an ideal state of hydration during exercise. Proper hydration and snacking practices may also be beneficial to the maintenance of optimal energy levels during exercise. There are *no* current guidelines on how to best use the half-time period in basketball and football to help athletes optimize a state of hydration and normal blood glucose. It is the aim of this study to learn more about current half-time eating and hydration behaviors to assess what types of beverages and snacks are being consumed at halftime.. Ultimately, this information can be used to develop strategies for optimally using the half time period to enhance/sustain performance and reduce illness/injury risks.

CHAPTER THREE

METHODS

The protocol for this study was approved by the Institutional Review Board (IRB) at Georgia State University. Following IRB-approval, surveys were distributed over a one year period. Athletic trainers and coaches of basketball and football teams, athlete agents, other athletic team employees, and players were contacted and provided with copies of a questionnaire to distribute to volunteer subjects (athletes). Contact was made by email and phone. Some surveys were sent by FedEx to volunteer subjects and returned to researchers once completed. If contacts had available technology, surveys were sent via email and either filled out by assistants on the computer and emailed back or filled out by the players and scanned onto a computer and emailed back via attachment. In some instances, surveys were given to acquaintances of athletes, filled out by the athletes, and returned to the researcher through the acquaintance. Volunteer subjects were asked to complete the questionnaire that inquires about their personal halftime hydration and snacking practices. The questionnaire is four pages in length (see appendix) and was provided with a stamped pre-addressed envelope for return to the investigators. Subjects were specifically requested to not include personal identifying information on the questionnaire so they can remain anonymous. In some cases, athletic coaches were contacted and confirmed that they could get their players to complete the survey but the researchers did not hear back from them once the surveys had been sent.

It was important for this to be totally anonymous, as some subjects are highly paid professional athletes who might not have wished to provide information on personal eating/drinking behaviors that can be attributable to them. In addition, the researchers of this study believe that the responses to the questions were more likely to be honest/accurate if the

subjects understood that they will remain anonymous. Athletes are not identified anywhere in the research but in some instances the researcher was aware of who filled out surveys. This was not reflected anywhere in the data. Some questions (i.e., height, weight) were not filled out by athletes and when the researcher was aware of what team the athlete was on, the height and weight was obtained by roster. The identities of these athletes are not reflected in the data.

Female basketball players were difficult to obtain for the survey so some athletes who had been contacted by a third party (outside of the researcher) returned the completed survey to the researcher. The identities of these athletes are not reflected in the data.

The questionnaire is benign in that there are no questions that would suggest behavioral change or place the volunteer subject at risk, making the completion of a signed and returned human consent form unnecessary. Athletes were provided with an approved human consent form for them to keep, but only for them to understand the nature of the study and the nature of their involvement. Most often, the consent form was returned, unsigned, with the completed surveys.

As completed surveys were received by the researcher, data were entered into PASW Statistics 18. Surveys were numbered according to the order entered into PASW Statistics 18 to allow for correction of entry errors. Some questions were entered as '0' to represent no answer if more than one choice was picked or the question was left blank. One survey was left out as the participant's survey listed age 34 and years played in college only, there was no way to find out if this person was still in college or filled the survey out looking back at college years played.

Once all 122 surveys were received, all data were analyzed in PASW Statistics 18. Race by sport was analyzed by using crosstabs. Data for height (inches and meters) and weight (pounds and kilograms) were analyzed using descriptive statistics (mean, standard deviation,

range, and frequencies). Data for setting of competition (indoors, outdoors, or both) were analyzed using crosstabs. Data for years played in college were analyzed using crosstabs. Data for years redshirted in college were analyzed using crosstabs. Data for years played at the professional level were analyzed using crosstabs. Data for minutes available at halftime for consumption of beverages and snacks were analyzed using crosstabs. All remaining data were analyzed using crosstabs and each set of data included a Chi Square Test. Completed surveys will be kept for future research in the area of halftime hydration and snacking of collegiate and professional athletes.

CHAPTER FOUR

RESULTS

It was hypothesized that athletes' halftime hydration practices do not contribute to sustaining a desirable hydration state and that athletes do not follow halftime snacking practices that theoretically improve athletic performance during the second half. Results showed what beverages and snacks athletes consumed at halftime but do not show if beverages consumed sustain a desirable hydration state nor if snacks consumed improve athletic performance in the second half.

Make up of subjects

The subjects in this study were collegiate and professional male American football players n=58 (47.5%), collegiate and professional male basketball players n=50 (41%) and collegiate women's basketball players n=14 (11.5%). No professional women's basketball players completed the survey.

Of the 122 subjects, 5 (4.1%) were biracial, 85 (69.7%) were African-American/Black, 2 (1.6%) were Hispanic, 27 (22.1%) were Caucasian and 3 (2.5%) were "other". Bi-racial, when specified, was listed as black/African-American and white (n=3) or black/African-American and American Indian/Alaska Native (n=1). Other, when specified, was listed as Australian (n=1) and African-Cameroon (n=1). The third other did not specify race. Of 58 football players, 3 (5.2%) were bi-racial, 42 (72.4%) were black/African-America, 1 (1.7%) was Hispanic, 11 (19.0%) were Caucasian, and 1 (1.7%) was "other". Bi-racial, when specified by football players, was listed as black/African-American and white (n=1) or black/African-American and American Indian/Alaska Native (n=1). No specification was listed by the football player who marked his race as "other". Of 50 men's basketball players, 2 (4.0%) were bi-racial, 33 (66.0%) were

black/African-American, 1 (2.0%) was Hispanic, 12 (24.0%) were Caucasian, and 2 (4.0%) were "other". Bi-racial, when specified by men's basketball players, was listed as black/African-American and white (n=2). "Other", when specified by men's basketball players, was listed as Australian (n=1) or African-Cameroon (n=1). Of 14 women's basketball players, 10 (71.4%) were black/African-American and 4 (28.6%) were Caucasian. Options given for race on the survey were American Indian and Alaska Native, Asian, Biracial, Black or African American, Hispanic, Native Hawaiian and Other Pacific Islander, White, and Other. See appendix table 1.

The mean height of the 122 subjects was 74.77 inches, SD = 4.38 in (189.78 cm, SD = 11.11 cm), the maximum height was 84.00 in (213.36 cm) and the minimum height was 63.00 in (160.02 cm). The mean weight was 220.33 lbs, SD = 45.77 lbs (100.05 kg, SD = 20.86 kg), the maximum weight was 330.00 lbs (150.00 kg), and the minimum weight was 130.00 lb (59.09 kg). See appendix table 2.

Out of 58 football players, 42 (72.4%) played outdoors and 16 (27.6%) played both outdoors and indoors. Out of 50 men's basketball players, 47 (94.0%) played indoors and 3 (2.5%) played both outdoors and indoors. Out of 14 women's basketball players, 12 (9.8%) played indoors and 2 (1.6%) played both outdoors and indoors. See appendix table 3.

Out of 58 collegiate and professional football players, one (1.7%) played no years in college, 13 (22.4%) played one year in college, 15 (25.9%) played two years in college, 14 (24.1%) played three years in college, and 15 (25.9%) played 4 years in college. Out of 50 collegiate and professional men's basketball players, two (4.0%) played no years in college, 15 (30.0%) played one year in college, 10 (20.0%) played two years in college, 13 (26.0%) played three years in college, and 10 (20.0%) played four years in college. Out of 14 collegiate women's basketball players, 1 (7.1%) played no years in college, two (14.3%) played one year in

college, four (28.6%) played two years in college, three (21.4%) played three years in college, three (21.4%) played four years in college, and one (7.1%) played five years in college. See appendix table 4.

Out of 58 collegiate and professional football players, 21 (36.2%) did not red shirt in college, 35 (60.3%) red shirted one year in college, and two (3.4%) red shirted two years in college. Out of 50 collegiate and professional men's basketball players, 33 (66.0%) did not red shirt in college, 11 (22.0%) red shirted one year in college, and six (12.0%) red shirted two years in college. Out of 14 collegiate women's basketball players, 11 (78.6%) did not red shirt in college and three (21.4%) red shirted one year in college. See appendix table 5.

Out of 58 collegiate and professional football players, 51 (87.9%) played no years as professionals, four (6.9%) played one to three years as professionals and three (5.2%) played four to eight years as professionals. Out of 50 collegiate and professional men's basketball players, 34 (68.0%) played no years as professionals, seven (14.0%) played one to three years as professionals, seven (14.0%) played four to eight years as professionals, one (2.0%) played 9-12 years as professionals, and one (2.0%) played 13-15 years as professionals. Out of 14 collegiate basketball players, none had played as professionals. See appendix table 6.

Time available to players at halftime for consumption of beverages and/or snacks

Out of 58 collegiate and professional football players, two (3.4%) had 0-5 minutes available, 19 (32.8%) had 6- 10 minutes available, 20 (34.5%) had 11-15 minutes available, and 17 (29.3%) had 16-20 minutes available. Out of 50 collegiate and professional men's basketball players, (16.0%) had 0-5 minutes available, 25 (50.0%) had 6-10 minutes available, 15 (30.0%) had 11-15 minutes available, and two (4.0%) had 16-20 minutes available. Out of 14 collegiate

women's basketball players, one (7.1%) had no minutes available, three (21.4%) had 0-5 minutes available, four (28.6%) had 6-10 minutes available, four (28.6%) had 11-15 minutes available, and two (14.3%) had 16-20 minutes available. See appendix table 7.

Beverages consumed by athletes at halftime

Of the beverages consumed by the 122 athletes surveyed, there was a statistically significant difference between sports in the consumption of Gatorade, Powerade, Powerade Zero, and water. Water (n=96) was consumed by most of the athletes followed by Gatorade (n=89), Powerade (n=41), and Powerade Zero (n=1).

There is no statistically significant difference between sports in the consumption of XS. Out of 58 collegiate and professional football players, none of them consumed XS during the halftime break. Out of 50 collegiate and professional men's basketball players, 3 (6.0%) consumed 1-2 cups of XS during the halftime break. Out of 14 collegiate women's basketball players, none consumed XS during the halftime break. See appendix table 8.

There is no statistically significant difference between sports in the consumption of FRS Energy Drink. Out of 58 collegiate and professional football players, none of them consumed FRS Energy Drink during the halftime break. Out of 50 collegiate and professional men's basketball players, 1 (2.0%) consumed 1-2 cups of FRS Energy Drink during the halftime break. Out of 14 collegiate women's basketball players, none consumed FRS Energy Drink during the halftime break. See appendix table 9.

There is no statistically significant difference between sports in the consumption of fruit juice. Out of 58 collegiate and professional football players, 1 (1.7%) consumed ½ cup of fruit

juice during halftime and 1 (1.7%) consumed 1-2 cups during the halftime break. Out of 50 collegiate and professional men's basketball players, 2 (4.0%) consumed ½ cup during the halftime break and 2 (4.0%) consumed 1-2 cups during the halftime break. Out of 14 collegiate women's basketball players, 1 consumed 3-4 cups of fruit juice during the halftime break. See appendix table 10.

There is a statistically significant difference between sports in the consumption of Gatorade (p=.045). Out of 58 collegiate and professional football players, 3 (5.2%) consumed ½ cup of Gatorade during halftime, 31 (53.4%) consumed 1-2 cups of Gatorade during the halftime break, and 9 (15.5%) consumed 3-4 cups of Gatorade during the halftime break. Out of 50 collegiate and professional men's basketball players, 1 (2.0%) consumed ½ cup of Gatorade during the halftime break, 26 (52.0%) consumed 1-2 cups of Gatorade during the halftime break, 7 (14.0%) consumed 3-4 cups of Gatorade during the halftime break and 5 (10.0%) consumed >4 cups of Gatorade during the halftime break. Out of 14 collegiate women's basketball players, 2 (14.3%) consumed ½ cup of Gatorade during the halftime break, 4 (28.6%) consumed1-2 cups of Gatorade during the halftime break and 1 consumed 3-4 cups of Gatorade during the halftime break. See appendix table 11.

There is no statistically significant difference between sports in the consumption of Gatorlode. Out of 58 collegiate and professional football players, 3 (5.2%) consumed 1-2 cups of Gatorlode during the halftime break. Out of 50 collegiate and professional men's basketball players, 2 (4.0%) consumed 3-4 cups of Gatorlode during the halftime break. Out of 14 collegiate women's basketball players none consumed Gatorlode during the halftime break. See appendix table 12.

There is no statistically significant difference between sports in the consumption of Hydrate. Out of 58 collegiate and professional football players, 2 (3.4%) consumed 1-2 cups of Hydrate during the halftime break, 1 (1.7%) consumed 3-4 cups of Hydrate during the halftime break, and 1 (1.7%) consumed >4 cups of Hydrate during the halftime break. Out of 50 collegiate and professional men's basketball players, 3 (6.0%)) consumed 1-2 cups of Hydrate during the halftime break. Out of 14 collegiate women's basketball players none consumed Hydrate during the halftime break. See appendix table 13.

There is a statistically significant difference between sports in the consumption of Powerade ($p<.001$). Out of 58 collegiate and professional football players, 1 (1.7%) consumed ½ cup of Powerade during the halftime break and 15 (25.9%) consumed 1-2 cups of Powerade during the halftime break. Out of 50 collegiate and professional men's basketball players, 2 (4.0%) consumed ½ cup of Powerade during the halftime break and 16 (32.0%) consumed 1-2 cups of Powerade during the halftime break. Out of 14 collegiate women's basketball players, 1 (7.1%) consumed ½ cup of Powerade during the halftime break, 2 (14.3%) consumed 1-2 cups of Powerade during the halftime break and 4 (28.6%) consumed 3-4 cups of Powerade during the halftime break. See appendix table 14.

There is a statistically significant difference between sports in the consumption of Powerade Zero ($p=.020$). Out of 58 collegiate and professional football players, none consumed Powerade Zero during the halftime break. Out of 50 collegiate and professional men's basketball players, none consumed Powerade Zero during the halftime break. Out of 14 collegiate women's basketball players, 1 (7.1%) consumed 1-2 cups of Powerade Zero during the halftime break. See appendix table 15.

There is no statistically significant difference between sports in the consumption of Vitamin Water. Out of 58 collegiate and professional football players 1 (1.7%) consumed 1-2 cups of Vitamin Water during the halftime break. Out of 50 collegiate and professional men's basketball players 1 (2.0%) consumed 1-2 cups of Vitamin Water during the halftime break and 1 (2.0%) consumed 3-4 cups of Gatorade during the halftime break. Out of 14 collegiate women's basketball players, none consumed Vitamin Water during the halftime break. See appendix table 16.

There is a statistically significant difference between sports in the consumption of water ($p=.049$). Out of 58 collegiate and professional football players, 5 (8.6%) consumed ½ cup of water during the halftime break, 28 (48.3%) consumed 1-2 cups of water during the halftime break, 8 (13.8%) consumed 3-4 cups of water during the halftime break and 1 (1.7%) consumed >4 cups of water during the halftime break. Out of 50 collegiate and professional men's basketball players, 3 (6.0%) consumed ½ cup of water during the halftime break, 27 (54.0%) consumed 1-2 cups of water during the halftime break, 7 (14.0%) consumed 3-4 cups of water during the halftime break, and 5 (10.0%) consumed >4 cups of water during the halftime break. Out of 14 collegiate women's basketball players, 4 (28.6%) consumed ½ cup of water during the halftime break, 4 (28.6%) consumed 1-2 cups of water during the halftime break, and 4 (28.6%) consumed 3-4 cups of water during the halftime break. See appendix table 17.

There is no statistically significant difference between sports in the consumption of other beverages. Out of 58 collegiate and professional football players, 2 (3.4%) consumed ½ cup of other beverage during the halftime break and 3 (5.2%) consumed 1-2 cups of other beverage during the halftime break. Out of 50 collegiate and professional men's basketball players 1 (2.0%) consumed >4 cups of other beverage during the halftime break. Out of 14 collegiate

women's basketball players none consumed other beverage during the halftime break. See appendix table 18.

Snacks consumed by athletes at halftime

Of the snacks consumed by the 122 athletes surveyed, there was a statistically significant difference between sports in the consumption of energy bars and fresh fruit. Energy bars (n=62) were consumed by most of the athletes followed by fresh fruit (n=41).

There is no statistically significant difference between sports in the consumption of canned fruit. Out of 58 collegiate and professional football players, 1 (1.7%) consumed ½ can of canned fruit during the halftime break and 1 (1.7%) consumed 1 can of canned fruit during the halftime break. Out of 50 collegiate and professional men's basketball players 2 (4.0%) consumed 1 can of canned fruit during the halftime break, 1 (2.0%) consumed 1 can of canned fruit during the halftime break and 1 (2.0%) consumed >1.5 cans of canned fruit during the halftime break. Out of 14 collegiate women's basketball players 1 (7.1%) consumed ½ can of canned fruit during the halftime break. See appendix table 19.

There is no statistically significant difference between sports in the consumption of crackers, pretzels, or saltines. Out of 58 collegiate and professional football players, 2 (3.4%) consumed ½ cup of crackers, pretzels, or saltines during the halftime break. Out of 50 collegiate and professional men's basketball players 6 (12.0%) consumed 1/2 cup of crackers, pretzels, or saltines during the halftime break. Out of 14 collegiate women's basketball players 1 (7.1%) consumed ½ cup of crackers, pretzels, or saltines during the halftime break. See appendix table 20.

There is a statistically significant difference between sports in the consumption of energy bars ($p<.001$). Out of 58 collegiate and professional football players, 15 (25.9%) consumed ½ of an energy bar during the halftime break, 26 (44.8%) consumed 1 energy bar during the halftime break, 3 (5.2%) consumed 1 ½ energy bars during the halftime break and 1 (1.7%) consumed >1 ½ energy bars during the halftime break. Out of 50 collegiate and professional men's basketball players, 5 (10.0%) consumed ½ of an energy bar during the halftime break, 9 (18.0%) consumed 1 energy bar during the halftime break, and 1 (2.0%) consumed 1 ½ energy bars during the halftime break. Out of 14 collegiate women's basketball players 1 (7.1%) consumed ½ of an energy bar during the halftime break and 1 (17.2%) consumed 1 energy bar during the halftime break. See appendix table 21.

There is no statistically significant difference between sports in the consumption of energy gel. Out of 58 collegiate and professional football players, 1 (1.7%) consumed 1 pack of energy gel during the halftime break. Out of 50 collegiate and professional men's basketball players, 1 (2.0%) consumed ½ pack of energy gel during the halftime break. Out of 14 collegiate women's basketball players, none consumed energy gel during the halftime break. See appendix table 22.

There is a statistically significant difference between sports in the consumption of fresh fruit ($p=.033$). Out of 58 collegiate and professional football players, 7 (12.1%) consumed ½ of a fruit during the halftime break, 12 (20.7%) consumed 1 fruit during the halftime break, 4 (6.9%) consumed 1 ½ fruits during the halftime break and 2 (3.4%) consumed >1 ½ fruits during the halftime break. Out of 50 collegiate and professional men's basketball players, 11 (22.0%) consumed ½ of a fruit during the halftime break, 1 (2.0%) consumed 1 fruit during the halftime break, 2 (4.0%) consumed 1 ½ fruits during the halftime break, and 1 (2.0%) consumed >1 ½

fruits during the halftime break. Out of 14 collegiate women's basketball players 1 (7.1%) consumed 1 fruit during the halftime break. See appendix table 23.

There is no statistically significant difference between sports in the consumption of peanut butter. Out of 58 collegiate and professional football players, 1 (1.7%) consumed 1 tablespoon (Tbsp) of peanut butter during the halftime break. Out of 50 collegiate and professional men's basketball players, 5 (10.0%) consumed ½ Tbsp of peanut butter during the halftime break. Out of 14 collegiate women's basketball players, none consumed peanut butter during the halftime break. See appendix table 24.

There is no statistically significant difference between sports in the consumption of peanut butter. Out of 58 collegiate and professional football players, none consumed salt free pretzels during the halftime break. Out of 50 collegiate and professional men's basketball players, 1 (2.0%) consumed ½ cup of salt free pretzels during the halftime break. Out of 14 collegiate women's basketball players, none consumed salt free pretzels during the halftime break. See appendix table 25.

There is no statistically significant difference between sports in the consumption of other snacks. Out of 58 collegiate and professional football players, 1 (1.7%) consumed 1 ½ of another snack during the halftime break. Out of 50 collegiate and professional men's basketball players, 1 (2.0%) consumed > 1 ½ other snacks, specified as Snickers, during the halftime break. Out of 14 collegiate women's basketball players, 1 (7.1%) consumed 1 other snack during the halftime break. See appendix table 26.

Halftime hydration

There is no statistically significant difference between sports in the purchase of drinks for halftime, the frequency of halftime hydration, and the influences that determine halftime hydration habits.

There is no statistically significant difference between sports in the purchase of drinks by the athlete or the team. Out of 58 collegiate and professional football players, 1 (1.7%) purchased his own drink for consumption at halftime and 55 (94.8%) consumed drinks at halftime that were purchased for them by their team. Out 50 collegiate and professional men's basketball players, 2 (4.0%) purchased their own drinks for consumption at halftime and 44 (88.0%) consumed drinks at halftime that were purchased for them by their team. Out of 14 collegiate women's basketball players, 13 (92.9%) consumed drinks at halftime that were purchased for them by their team. See appendix table 27.

There is no statistically significant difference between sports in the frequency of halftime hydration habits. Out of 58 collegiate and professional football players, 2 (3.4%) sometimes never hydrated the same way at every halftime, 20 (34.5%) sometimes hydrated the same way at every halftime, 20 (34.5%) sometimes always hydrated the same way at every halftime, and 16 (27.6%) always hydrated the same way at every halftime. Out of 50 collegiate and professional men's basketball players, 3 (6.0%) sometimes never hydrated the same way at every halftime, 19 (38.0%) sometimes hydrated the same way at every halftime, 12 (24.0%) sometimes always hydrated the same way at every halftime and 15 (30.0%) always hydrated the same way at every halftime. Out of 14 collegiate women's basketball players, 1 (7.1%) never hydrated the same way at every halftime, 2 (14.3%) sometimes never hydrated the same way at every halftime, 3 (21.4%) sometimes hydrated the same way at every halftime, 5 (35.7%) sometimes always

hydrated the same way at every halftime, and 3 (21.4%) always hydrated the same way at every halftime. See appendix table 28.

There is no statistically significant difference between sports in the influences that determine halftime hydration. Choices given were availability of beverages, difficulty of the game, team requirement, temperature and amount of time played. Out of 58 collegiate and professional football players, 4 (6.9%) said that availability of beverages influenced how they hydrated at halftime, 7 (12.1%) said that the difficulty of the game influenced how they hydrated at halftime, 16 (27.6%) said that temperature influenced how they hydrated at halftime, and 17 (29.3%) said that the amount of time they played during the game influenced how they hydrated at halftime. Out of 50 collegiate and professional men's basketball players, 8 (16.0%) said that availability of beverages influenced how they hydrated at halftime, 7 (14.0%) said that the difficulty of the game influenced how they hydrated at halftime, 2 (4.0%) said that hydrating at halftime was a team requirement, 2 (4.0%) said that temperature influenced how they hydrated at halftime, and 18 (36.0%) said that the amount of time they played during the game influenced how they hydrated at halftime . Out of 14 collegiate women's basketball players, 1 (7.1%) said that the difficulty of the game influenced how they hydrated at halftime, 3 (21.4%) said that temperature influenced how they hydrated at halftime, and 6 (42.9%) said that the amount of time they played during the game influenced how they hydrated at halftime. See appendix table 29.

Halftime snacking

Of the halftime snacking habits listed on the survey, there was a statistically significant difference between sports in the purchase of snacks for halftime and the frequency of halftime snacking habits.

There is a statistically significant difference between sports in the purchase of snacks by the athlete or the team ($p=.004$). Out of 58 collegiate and professional football players, 2 (3.4%) purchased their own snacks for consumption at halftime and 51 (87.9%) consumed snacks at halftime that were purchased for them by their team. Out of 50 collegiate and professional men's basketball players, 4 (8.0%) purchased their own snacks for consumption at halftime and 36 (72.0%) consumed snacks at halftime that were purchased for them by their team. Out of 14 collegiate women's basketball players, 1 (7.1%) purchased her own snacks for consumption at halftime and 6 (42.9%) consumed snacks at halftime that were purchased for them by their team. See appendix table 30.

There is a statistically significant difference between sports in the frequency of halftime snacking habits ($p<.001$). Out of 58 collegiate and professional football players, 4 (6.9% never snacked the same way at every halftime, 7 (12.1%) sometimes never snacked the same way at every halftime, 24 (41.4%) sometimes snacked the same way at every halftime, 11 (19.0%) sometimes always snacked the same way at every halftime, and 11 (19.0%) always snacked the same way at every halftime. Out of 50 collegiate and professional men's basketball players, 13 (26.0%) never snacked the same way at every halftime, 10 (20.0%) sometimes never snacked the same way at every halftime, 21 (42.0%) sometimes snacked the same way at every halftime, 1 (2.0%) sometimes always snacked the same way at every halftime, and 3 (6.0%) always snacked the same way at every halftime. Out of 14 collegiate women's basketball players, 2 (14.3%) never snacked the same way at every halftime, 3 (21.4%) sometimes never snacked the same

way at every halftime, 1 (7.1%) sometimes snacked the same way at every halftime, 1 (7.1%) sometimes always snacked the same way at every halftime, and 2 (14.3%) always snacked the same way at every halftime. See appendix table 31.

There is no statistically significant difference between sports in the influences that determine halftime snacking. Choices given were availability of beverages, difficulty of the game, team requirement, temperature and amount of time played. Out of 58 collegiate and professional football players, 9 (15.5%) said that availability of snacks influenced how they snacked at halftime, 11 (19.0%) said that the difficulty of the game influenced how they snacked at halftime, 1 (1.7%) said that team requirements influenced how they snacked at halftime, 4 (6.9%) said that temperature influenced how they snacked at halftime, and 4 (37.9%) said that the amount of time they played during the game influenced how they snacked at halftime. Out of 50 collegiate and professional men's basketball players, 14 (28.0%) said that availability of snacks influenced how they snacked at halftime, 1 (2.0%) said that the difficulty of the game influenced how they snacked at halftime, 1 (2.0%) said that snacking at halftime was a team requirement, 1 (2.0%) said that temperature influenced how they snacked at halftime, and 17 (34.0%) said that the amount of time they played during the game influenced how they snacked at halftime . Out of 14 collegiate women's basketball players, 6 (42.9%) said that the availability of snacks influenced how they snacked at halftime and 1 (7.1%) said that the difficulty of the game influenced how they snacked at halftime. See appendix table 32.

Team recommendations for halftime hydration and/or snacking

There is a statistically significant difference between sports in the halftime recommendations of teams for both hydration and snacking.

There is a statistically significant difference between sports in the halftime hydration recommendations of teams ($p<.001$). Out of 58 collegiate and professional football players, three (5.2%) were on teams that sometimes always recommended hydrating at halftime and 54 (93.1%) were on teams that always recommended hydrating at halftime. Out of 50 collegiate and professional men's basketball players, two (4.0%) were on teams that never recommended hydrating during halftime, four (8.0%) were on teams that sometimes never recommended hydrating at halftime, four (8.0%) were on teams that sometimes recommended hydrating at halftime, 14 (28.0%) were on teams that sometimes always recommended hydrating at halftime, and 26 (52.0%) were on teams that always recommended hydrating at halftime. Out of 14 collegiate women's basketball players three (21.4%) were on teams that sometimes recommended hydrating at halftime, six (42.9%) were on teams that sometimes always recommended hydrating at halftime, and five (35.7%) were on teams that always recommended hydrating at halftime. See appendix table 33.

There is a statistically significant difference between sports in the halftime snacking recommendations of teams ($p<.001$). Out of 58 collegiate and professional football players, one (1.7%) were on teams that sometimes never recommended snacking at halftime, 13 (22.4%) were on teams that sometimes recommended snacking at halftime, 10 (17.2%) were on teams that sometimes always recommended snacking at halftime, and 3 (56.9%) were on teams that always recommended snacking at halftime. Out of 50 collegiate and professional men's basketball players, 13 (26.0%) were on teams that never recommended snacking during halftime, nine (18.0%) were on teams that sometimes never recommended snacking at halftime, 16 (32.0%) were on teams that sometimes recommended snacking at halftime, six (12.0%) were on teams that sometimes always recommended snacking at halftime, and six (12.0%) were on teams that

always recommended snacking at halftime. Out of 14 collegiate women's basketball players, seven (50.0%) were on teams that never recommended snacking at halftime, one (7.1%) was on a team that sometimes never recommended snacking at halftime, three (21.4%) were on teams that sometimes recommended snacking at halftime, and two (14.3%) were on teams that sometimes always recommended snacking at halftime. See appendix table 34.

Availability and preferability of beverages and snacks at halftime

There is a statistically significant difference between sports in the availability of snacks at halftime and the preferability of snacks available at halftime and no statistically significant difference between sports in the availability of beverages at halftime and the preferability of beverages available at halftime.

There is no statistically significant difference between sports in the availability of beverages at halftime. Out of 58 collegiate and professional football players, one (1.7%) was on a team that sometimes always made beverages available at halftime and 56 (96.6%) were on teams that always made beverages available at halftime. Out of 50 collegiate and professional men's basketball players, one (2.0%) was on a team that sometimes never made beverages available at halftime, three (6.0%) were on teams that sometimes made beverages available at halftime, four (8.0%) were on teams that sometimes always made beverages available at halftime, and 42 (84.0%) were on teams that always made beverages available at halftime. Out of 14 collegiate women's basketball players, one (7.1%) were on teams that sometimes made beverages available at halftime, two (14.3%) were on teams that sometimes always made beverages available at halftime, and 11 (78.6%) were on teams that always made beverages available at halftime. See appendix table 35.

There is no statistically significant difference between sports in the beverage preferability of available beverages at halftime. Out of 58 collegiate and professional football players, one (1.7%) never preferred the beverages provided by their teams at halftime, six (10.3%) sometimes preferred the beverages provided by their teams at halftime, nine (15.5%) sometimes always preferred the beverages provided by their teams at halftime, and 41 (70.7%) always preferred the beverages provided by their teams at halftime. Out of 50 collegiate and professional men's basketball players, one (2.0%) sometimes never preferred the beverages provided by his team at halftime, seven (14.0%) sometimes preferred the beverages provided by their teams at halftime, 14 (28.0%) sometimes always preferred the beverages provided by their teams at halftime, and 26 (52.0%) always preferred the beverages provided by their teams at halftime. Out of 14 collegiate women's basketball players, four (28.6%) sometimes preferred the beverages provided by their teams at halftime, two (14.3%) sometimes always preferred the beverages provided by their teams at halftime, and eight (57.1%) always preferred the beverages provided by their teams at halftime. See appendix table 36.

There is a statistically significant difference between sports in the availability of snacks at halftime ($p<.001$). Out of 58 collegiate and professional football players, two (3.4%) were on a team that sometimes made snacks available at halftime, five (8.6%) were on a team that sometimes always made snacks available at halftime, and 49 (84.5%) were on teams that always made snacks available at halftime. Out of 50 collegiate and professional men's basketball players, five (10.0%) were on a team that never made snacks available at halftime, four (8.0%) sometimes never made snacks available at halftime, 14 (28.0%) were on teams that sometimes made snacks available at halftime, six (12.0%) were on teams that sometimes always made snacks available at halftime, and 20 (40.0%) were on teams that always made snacks available at

halftime. Out of 14 collegiate women's basketball players, eight (57.1%) were on teams that never made snacks available at halftime, three (21.4%) were on teams that sometimes made snacks available at halftime, one (7.1%) was on a team that sometimes always made snacks available at halftime, and two (14.3%) were on teams that always made snacks available at halftime. See appendix table 37.

There is a statistically significant difference between sports in the snack preferability of available snacks at halftime ($p<.001$). Out of 58 collegiate and professional football players, 11 (19.0%) sometimes preferred the snacks provided by their teams at halftime, 18 (31.0%) sometimes always preferred the snacks provided by their teams at halftime, and 28 (48.3%) always preferred the snacks provided by their teams at halftime. Out of 50 collegiate and professional men's basketball players, six (12.0%) never preferred the snacks provided by their teams at halftime, four (8.0%) sometimes never preferred the snacks provided by their teams at halftime, 17 (34.0%) sometimes preferred the snacks provided by their teams at halftime, 11 (22.0%) sometimes always preferred the snacks provided by their teams at halftime, and 11 (22.0%) always preferred the snacks provided by their teams at halftime. Out of 14 collegiate women's basketball players, four (28.6%) never preferred the snacks provided by their teams at halftime, five (35.7%) sometimes preferred the snacks provided by their teams at halftime, one (7.1%) sometimes always preferred the snacks provided by her team at halftime, and one (7.1%) always preferred the snacks provided by her team at halftime. See appendix table 38.

Environmental influences on athletes' halftime hydration and snacking habits

There is a statistically significant difference between sports in temperature's influence on what athletes drink at halftime and humidity's influence on what athletes drink at halftime.

There is no statistically significant difference between sports in altitude's influence on what athletes drink at halftime and no statistically significant difference between sports in temperature's, humidity's and altitude's influence on what athletes eat at halftime.

There is a statistically significant difference between sports in temperature's influence on what athletes drink at halftime ($p<.001$). Out of 58 collegiate and professional football players, 11 (19.0%) said that temperature sometimes influenced what they drank at halftime, 11 (19.0%) said that temperature sometimes always influenced what they drank at halftime, and 35 (60.3%) said that temperature always influenced what they drank at halftime. Out of 50 collegiate and professional basketball players, four (8.0%) said that temperature never influenced what they drank at halftime, eight (16.0%) said that temperature sometimes never influenced what they drank at halftime, 19(38.0%) said that temperature sometimes influenced what they drank at halftime, 14 (28.0%) said that temperature sometimes always influenced what they drank at halftime, and five (10.0%) said that temperature always influenced what they drank at halftime. Out of 14 collegiate women's basketball players, one (7.1%) said that temperature never influenced what they drank at halftime, eight (16.0%) said that temperature sometimes never influenced what they drank at halftime, 19 (38.0%) said that temperature sometimes influenced what they drank at halftime, 14 (28.0%) said that temperature sometimes always influenced what they drank at halftime, and five (10.0%) said that temperature always influenced what they drank at halftime. See appendix table 39.

There is no statistically significant difference between sports in temperature's influence on what athletes eat at halftime. Out of 58 collegiate and professional football players, six (10.3%) said that temperature never influenced what they ate at halftime, 10 (17.2%) said that temperature sometimes never influenced what they ate at halftime, 17 (29.3%) said that

temperature sometimes influenced what they ate at halftime, 11 (19.0%) said that temperature sometimes always influenced what they ate at halftime, and 13 (22.4%) said that temperature always influenced what they ate at halftime. Out of 50 collegiate and professional basketball players, 11 (22.0%) said that temperature never influenced what they ate at halftime, 12 (24.0%) said that temperature sometimes never influenced what they ate at halftime, 17 (34.0%) said that temperature sometimes influenced what they ate at halftime, 4 (8.0%) said that temperature sometimes always influenced what they ate at halftime, and five (10.0%) said that temperature always influenced what they ate at halftime. Out of 14 collegiate women's basketball players, five (35.7%) said that temperature never influenced what they ate at halftime, two (14.3%) said that temperature sometimes never influenced what they ate at halftime, four (28.6%) said that temperature sometimes influenced what they ate at halftime, 1 (7.1%) said that temperature sometimes always influenced what they ate at halftime, and one (7.1%) said that temperature always influenced what they ate at halftime. See appendix table 40.

There is a statistically significant difference between sports in humidity's influence on what athletes drink at halftime ($p<.001$). Out of 58 collegiate and professional football players, one (1.7%) said that humidity sometimes never influenced what he drank at halftime, eight (13.8%) said that humidity sometimes influenced what they drank at halftime, 11 (19.0%) said that humidity sometimes always influenced what they drank at halftime, and 37 (63.8%) said that humidity always influenced what they drank at halftime. Out of 50 collegiate and professional basketball players, eight (16.0%) said that humidity never influenced what they drank at halftime, four (8.0%) said that humidity sometimes never influenced what they drank at halftime, 18 (36.0%) said that humidity sometimes influenced what they drank at halftime, 13 (26.0%) said that humidity sometimes always influenced what they drank at halftime, and seven (14.0%)

said that humidity always influenced what they drank at halftime. Out of 14 collegiate women's basketball players, one (7.1%) said that humidity never influenced what they drank at halftime, three (21.4%) said that humidity sometimes influenced what they drank at halftime, six (42.9%) said that humidity sometimes always influenced what they drank at halftime, and four (28.6%) said that humidity always influenced what they drank at halftime. See appendix table 41.

There is no statistically significant difference between sports in humidity's influence on what athletes eat at halftime. Out of 58 collegiate and professional football players, six (10.3%) said that humidity never influenced what they ate at halftime, 10 (17.2%) said that humidity sometimes never influenced what they ate at halftime, 18 (31.0%) said that humidity sometimes influenced what they ate at halftime, nine (15.5%) said that humidity sometimes always influenced what they ate at halftime, and 14 (24.1%) said that humidity always influenced what they ate at halftime. Out of 50 collegiate and professional basketball players, 12 (24.0%) said that humidity never influenced what they ate at halftime, 12 (24.0%) said that humidity sometimes never influenced what they ate at halftime, 16 (32.0%) said that humidity sometimes influenced what they ate at halftime, 7 (14.0%) said that humidity sometimes always influenced what they ate at halftime, and two (4.0%) said that humidity always influenced what they ate at halftime. Out of 14 collegiate women's basketball players, four (28.6%) said that humidity never influenced what they ate at halftime, three (21.4%) said that humidity sometimes never influenced what they ate at halftime, five (35.7%) said that humidity sometimes influenced what they ate at halftime, and one (7.1%) said that humidity always influenced what they ate at halftime. See appendix table 42.

There is no statistically significant difference between sports in altitude's influence on what athletes drink at halftime. Out of 58 collegiate and professional football players, 13

(22.4%) said that altitude never influenced what they drank at halftime, 10 (17.2%) said that altitude sometimes never influenced what they drank at halftime, 10 (17.2%) said that altitude sometimes influenced what they drank at halftime, 17 (29.3%) said that altitude sometimes always influenced what they drank at halftime, and six (10.3%) said that altitude always influenced what they drank at halftime. Out of 50 collegiate and professional basketball players, 13 (26.0%) said that altitude never influenced what they drank at halftime, seven (14.0%) said that altitude sometimes never influenced what they drank at halftime, 11 (2.0%) said that altitude sometimes influenced what they drank at halftime, 16 (32.0%) said that altitude sometimes always influenced what they drank at halftime, and three (6.0%) said that altitude always influenced what they drank at halftime. Out of 14 collegiate women's basketball players, three (21.4%) said that altitude never influenced what they drank at halftime, three (21.4%) said that altitude sometimes never influenced what they drank at halftime, two (14.3%) said that altitude sometimes influenced what they drank at halftime, three (21.4%) said that altitude sometimes always influenced what they drank at halftime, and three (21.4%) said that altitude always influenced what they drank at halftime. See appendix table 43.

There is no statistically significant difference between sports in altitude's influence on what athletes eat at halftime. Out of 58 collegiate and professional football players, 15 (25.9%) said that altitude never influenced what they ate at halftime, 13 (22.4%) said that altitude sometimes never influenced what they ate at halftime, 14 (24.1%) said that altitude sometimes influenced what they ate at halftime, eight (13.8%) said that altitude sometimes always influenced what they ate at halftime, and six (10.3%) said that altitude always influenced what they ate at halftime. Out of 50 collegiate and professional basketball players, 18 (36.0%) said that altitude never influenced what they ate at halftime, 10 (20.0%) said that altitude sometimes

never influenced what they ate at halftime, 14 (28.0%) said that altitude sometimes influenced what they ate at halftime, 7 (14.0%) said that altitude sometimes always influenced what they ate at halftime, and one (2.0%) said that altitude always influenced what they ate at halftime. Out of 14 collegiate women's basketball players, five (35.7%) said that altitude never influenced what they ate at halftime, four (28.6%) said that altitude sometimes never influenced what they ate at halftime, two (14.3%) said that altitude sometimes influenced what they ate at halftime, one (7.1%) said that altitude sometimes always influenced what they ate at halftime, and one (7.1%) said that altitude always influenced what they ate at halftime. See appendix table 44.

Cramps and injuries

There is no statistically significant difference among sports in the frequency that athletes are prone to cramping, the influence of cramping on what athletes drink at halftime, and the influence of cramping on what athletes eat at halftime. There is no statistically significant difference among sports in the frequency that athletes are prone to injuries, the influence of injuries on what athletes drink at halftime, and the influence of injuries on what athletes eat at halftime

There is no statistically significant difference among sports in the frequency that athletes are prone to cramping. Out 58 collegiate and professional basketball players, nine (15.5%) were never prone to cramping, 28 (48.3%) were sometimes never prone to cramping, 11 (19.0%) were sometimes prone to cramping, two (3.4%) were sometimes always prone to cramping, and seven (12.1%) were always prone to cramping. Out of 50 collegiate and professional men's basketball players, 12 (24.0%) were never prone to cramping, 16 (32.0%) were sometimes never prone to cramping, 13 (26.0%) were sometimes prone to cramping, five (10.0%) were sometimes always

prone to cramping, and four (8.0%) were always prone to cramping. Out of 14 collegiate women's basketball players, three (21.4%) were never prone to cramping, four (28.6%) were sometimes never prone to cramping, four (28.6%) were sometimes prone to cramping, two (14.3%) were sometime always prone to cramping, and one (7.1%) were always prone to cramping. See appendix table 45.

There is no statistically significant difference between sports in the influence of cramping on what athletes drink at halftime. Out of 58 collegiate and professional football players, five (8.6%) said that cramping never influenced what they drank at halftime, six (10.3%) said that cramping sometimes never influenced what they drank at halftime, 11 (19.0%) said that cramping sometimes influenced what they drank at halftime, nine (15.5%) said that cramping sometimes always influenced what they drank at halftime, and 26 (44.8%) said that cramping always influenced what they drank at halftime. Out of 50 collegiate and professional basketball players, nine (18.0%) said that cramping never influenced what they drank at halftime, five (10.0%) said that cramping sometimes never influenced what they drank at halftime, nine (18.0%) said that cramping sometimes influenced what they drank at halftime, 12 (24.0%) said that cramping sometimes always influenced what they drank at halftime, and 15 (30.0%) said that cramping always influenced what they drank at halftime. Out of 14 collegiate women's basketball players, two (14.3%) said that cramping never influenced what they drank at halftime, three (21.4%) said that cramping sometimes never influenced what they drank at halftime, three (21.4%) said that cramping sometimes influenced what they drank at halftime, three (21.4%) said that cramping sometimes always influenced what they drank at halftime, and two (14.3%) said that cramping always influenced what they drank at halftime. See appendix table 46.

There is no statistically significant difference between sports in the influence of cramping on what athletes eat at halftime. Out of 58 collegiate and professional football players, 12 (20.7%) said that cramping never influenced what they ate at halftime, 13 (22.4%) said that cramping sometimes never influenced what they ate at halftime, 11 (19.0%) said that cramping sometimes influenced what they ate at halftime, 10 (17.2%) said that cramping sometimes always influenced what they ate at halftime, and 11 (19.0%) said that cramping always influenced what they ate at halftime. Out of 50 collegiate and professional basketball players, 15 (30.0%) said that cramping never influenced what they ate at halftime, seven (14.0%) said that cramping sometimes never influenced what they ate at halftime, 10 (20.0%) said that cramping sometimes influenced what they ate at halftime, 11 (22.0%) said that cramping sometimes always influenced what they ate at halftime, and six (12.0%) said that cramping always influenced what they ate at halftime. Out of 14 collegiate women's basketball players, five (35.7%) said that cramping never influenced what they ate at halftime, two (14.3%) said that cramping sometimes never influenced what they ate at halftime, four (28.6%) said that cramping sometimes influenced what they ate at halftime, and one (7.1%) said that cramping sometimes always influenced what they ate at halftime. See appendix table 47.

There is no statistically significant difference among sports in the frequency that athletes are prone to injuries. Out 58 collegiate and professional basketball players, 10 (17.2%) were never prone to injuries, 25 (43.1%) were sometimes never prone to injuries, 16 (27.6%) were sometimes prone to injuries, four (6.9%) were sometimes always prone to injuries, and two (3.4%) were always prone to injuries. Out of 50 collegiate and professional men's basketball players, five (10.0%) were never prone to injuries, 28 (56.0%) were sometimes never prone to injuries, 15 (30.0%) were sometimes prone to injuries, one (2.0%) were sometimes always prone

to injuries, and one (2.0%) were always prone to injuries. Out of 14 collegiate women's basketball players, three (21.4%) were sometimes never prone to injuries, seven (50.0%) were sometimes prone to injuries, two (14.3%) were sometimes always prone to injuries, and one (7.1%) was always prone to injuries. See appendix table 48.

There is no statistically significant difference between sports in the influence of injuries on what athletes drink at halftime. Out of 58 collegiate and professional football players, 20 (34.5%) said that injuries never influenced what they drank at halftime, 15 (25.9%) said that injuries sometimes never influenced what they drank at halftime, 14 (24.1%) said that injuries sometimes influenced what they drank at halftime, four (6.9%) said that injuries sometimes always influenced what they drank at halftime, and four (6.9%) said that injuries always influenced what they drank at halftime. Out of 50 collegiate and professional basketball players, 20 (40.0%) said that injuries never influenced what they drank at halftime, 14 (28.0%) said that injuries sometimes never influenced what they drank at halftime, 10 (20.0%) said that injuries sometimes influenced what they drank at halftime, three (6.0%) said that injuries sometimes always influenced what they drank at halftime, and three (6.0%) said that injuries always influenced what they drank at halftime. Out of 14 collegiate women's basketball players, five (35.7%) said that injuries never influenced what they drank at halftime, five (35.7%) said that injuries sometimes never influenced what they drank at halftime, one (7.1%) said that injuries sometimes influenced what they drank at halftime, and one (7.1%) said that injuries sometimes always influenced what they drank at halftime. See appendix table 49.

There is no statistically significant difference between sports in the influence of injuries on what athletes eat at halftime. Out of 58 collegiate and professional football players, 21 (36.2%) said that injuries never influenced what they ate at halftime, 18 (31.0%) said that

injuries sometimes never influenced what they ate at halftime, 11 (19.0%) said that injuries sometimes influenced what they ate at halftime, five (8.6%) said that injuries sometimes always influenced what they ate at halftime, and two (3.4%) said that injuries always influenced what they ate at halftime. Out of 50 collegiate and professional basketball players, 2 (44.0%) said that injuries never influenced what they ate at halftime, 14 (28.0%) said that injuries sometimes never influenced what they ate at halftime, seven (14.0%) said that injuries sometimes influenced what they ate at halftime, four (8.0%) said that injuries sometimes always influenced what they ate at halftime, and two (4.0%) said that injuries always influenced what they ate at halftime. Out of 14 collegiate women's basketball players, six (42.9%) said that injuries never influenced what they ate at halftime, four (28.6%) said that injuries sometimes never influenced what they ate at halftime, and two (14.3%) said that injuries sometimes influenced what they ate at halftime. See appendix table 50.

Pre-game and first half hydration and snacking practices of athletes

There is a statistically significant difference among sports in the influence of pre-game drinking practices on halftime hydration habits and the influence of first half drinking practices on halftime hydration habits.

There is no statistically significant difference among sports in the timing of pre-game meal consumption. Out of 58 collegiate and professional football players, five (8.6%) consumed their pre-game meal 1-2 hours before kick-off, 35 (60.3%) consumed their pre-game meal 2.5-4.0 hours before kick-off, and 16 (27.6%) consumed their pre-game meal 4.5-6.0 hours before kick-off. Out of 50 collegiate and professional men's basketball players, five (10.0%) consumed their pre-game meal 1-2 hours before tipoff, 35 (70.0%) consumed their pre-game meal 2.5-4.0

hours before tipoff, and eight (16.0%) consumed their pre-game meal 4.5-6.0 hours before tipoff. Out of 14 collegiate women's basketball players, 11 (78.6%) consumed their pre-game meal 2.5-4.0 hours before tipoff and two (14.3%) consumed their pre-game meal 4.5-6.0 hours before tipoff. See appendix table 51.

There is no statistically significant difference among sports in the consumption of fluids between pre-game warm up and kick off/tipoff. Out of 58 collegiate and professional football players, three (5.2%) sometimes never consumed fluids between pre-game warm up and kick off, five (8.6%) sometimes consumed fluids between pre-game warm up and kick off, 13 (22.4%) sometimes always consumed fluids between pre-game warm up and kick off, and 35 (60.3%) always consumed fluids between pre-game warm up and kick off. Out of 50 collegiate and professional men's basketball players, two (4.0%) never consumed fluids between pre-game warm up and tipoff, six (12.0%) sometimes never consumed fluids between pre-game warm up and tipoff, seven (14.0%) sometimes consumed fluids between pre-game warm up and tipoff, 10 (20.0%) sometimes always consumed fluids between pre-game warm up and tipoff, and 25 (50.0%) always consumed fluids between pre-game warm up and tipoff. Out of 14 collegiate women's basketball players, one (7.1%) never consumed fluids between pre-game warm up and tipoff, two (14.3%) sometimes never consumed fluids between pre-game warm up and tipoff, four (28.6%) sometimes consumed fluids between pre-game warm up and tipoff, and seven (50.0%) always consumed fluids between pre-game warm up and tipoff. See appendix table 52.

There is no statistically significant difference among sports in the consumption of fluids during the first half of the game. Out of 58 collegiate and professional football players, two (3.4%) sometimes never consumed fluids during the first half of the game, three (5.2%) sometimes consumed fluids during the first half of the game, 13 (22.4%) sometimes always

consumed fluids during the first half of the game, 18 (31.0%) sometimes always consumed fluids during the first half of the game, and 34 (58.6%) always consumed fluids during the first half of the game. Out of 50 collegiate and professional men's basketball players, five (10.0%) sometimes never consumed fluids during the first half of the game, nine (18.0%) sometimes consumed fluids during the first half of the game, 11 (22.0%) sometimes always consumed fluids during the first half of the game, and 25 (50.0%) always consumed fluids during the first half of the game. Out of 14 collegiate women's basketball players, one (7.1%) sometimes never consumed fluids during the first half of the game, five (35.7%) sometimes consumed fluids during the first half of the game, one (7.1%) sometimes always consumed fluids during the first half of the game, and seven (50.0%) always consumed fluids during the first half of the game. See appendix table 53.

There is a statistically significant difference among sports in the influence of pre-game drinking practices on halftime hydration habits (p=.046). Out of 58 collegiate and professional football players, seven (12.1%) said that pre-game drinking practices never influenced how they hydrated at halftime, three (5.2%) said that pre-game drinking practices sometimes never influenced how they hydrated at halftime, 17 (29.3%) said that pre-game drinking practices sometimes influenced how they hydrated at halftime, 14 (24.1%) said that pre-game drinking practices sometimes always influenced how they hydrated at halftime, and 16 (27.6%) said that pre-game drinking practices always influenced how they hydrated at halftime. Out of 50 collegiate and professional men's basketball players, six (12.0%) said that pre-game drinking practices never influenced how they hydrated at halftime, five (10.0%) said that pre-game drinking practices sometimes never influenced how they hydrated at halftime, 17 (34.0%) said that pre-game drinking practices sometimes influenced how they hydrated at halftime, eight

(16.0%) said that pre-game drinking practices sometimes always influenced how they hydrated at halftime, and 13 (26.0%) said that pre-game drinking practices always influenced how they hydrated at halftime. Out of 14 collegiate women's basketball players, four (28.6%) said that pre-game drinking practices sometimes never influenced how they hydrated at halftime, six (42.9%) said that pre-game drinking practices sometimes influenced how they hydrated at halftime, one (7.1%) said that pre-game drinking practices sometimes always influenced how they hydrated at halftime, and one (7.1%) said that pre-game drinking practices always influenced how they hydrated at halftime. See appendix table 54.

There is a statistically significant difference among sports in the influence of first half drinking practices on halftime hydration habits (p=.035). Out of 58 collegiate and professional football players, four (6.9%) said that first half drinking practices never influenced how they hydrated at halftime, three (5.2%) said that first half drinking practices sometimes never influenced how they hydrated at halftime, 19 (32.8%) said that first half drinking practices sometimes influenced how they hydrated at halftime, 14 (24.1%) said that first half drinking practices sometimes always influenced how they hydrated at halftime, and 15 (25.9%) said that first half drinking practices always influenced how they hydrated at halftime. Out of 50 collegiate and professional men's basketball players, four (8.0%) said that first half drinking practices never influenced how they hydrated at halftime, five (10.0%) said that first half drinking practices sometimes never influenced how they hydrated at halftime, 15 (30.0%) said that first half drinking practices sometimes influenced how they hydrated at halftime, 10 (20.0%) said that first half drinking practices sometimes always influenced how they hydrated at halftime, and 16 (32.0%) said that first half drinking practices always influenced how they hydrated at halftime. Out of 14 collegiate women's basketball players, three (21.4%) said that first half

drinking practices sometimes never influenced how they hydrated at halftime, six (42.9%) said that first half drinking practices sometimes influenced how they hydrated at halftime, one (7.1%) said that first half drinking practices sometimes always influenced how they hydrated at halftime, and one (7.1%) said that first half drinking practices always influenced how they hydrated at halftime. See appendix table 55.

There is no statistically significant difference among sports in the consumption of food between pre-game warm up and kick off/tipoff. Out of 58 collegiate and professional football players, 25 (43.1%) never consumed food between pre-game warm up and kick off, 11 (19.0%) sometimes never consumed food between pre-game warm up and kick off, 10 (17.2%) sometimes consumed food between pre-game warm up and kick off, 8 (13.8%) sometimes always consumed food between pre-game warm up and kick off, and 3 (5.2%) always consumed food between pre-game warm up and kick off. Out of 50 collegiate and professional men's basketball players, 15 (30.0%) never consumed food between pre-game warm up and tipoff, 13 (26.0%) sometimes never consumed food between pre-game warm up and tipoff, 12 (24.0%) sometimes consumed food between pre-game warm up and tipoff, 6 (12.0%) sometimes always consumed food between pre-game warm up and tipoff, and 4 (8.0%) always consumed food between pre-game warm up and tipoff. Out of 14 collegiate women's basketball players, five (35.7%) never consumed food between pre-game warm up and tipoff, four (28.6%) sometimes never consumed food between pre-game warm up and tipoff, three (21.4%) sometimes consumed food between pre-game warm up and tipoff, and two (14.3%) always consumed food between pre-game warm up and tipoff. See appendix table 56.

There is no statistically significant difference among sports in the consumption of food during the first half of the game. Out of 58 collegiate and professional football players, 32

(55.2%) never consumed food during the first half of the game, seven (12.1%) sometimes never consumed food during the first half of the game, nine (15.5) sometimes consumed food during the first half of the game, seven (12.1%) sometimes always consumed food during the first half of the game, and two (3.4%) always consumed food during the first half of the game. Out of 50 collegiate and professional men's basketball players, 30 (60.0%) never consumed food during the first half of the game, 12 (24.0%) sometimes never consumed food during the first half of the game, seven (14.0%) sometimes consumed food during the first half of the game, and one (2.0%) always consumed food during the first half of the game. Out of 14 collegiate women's basketball players, eleven (78.6%) never consumed food during the first half of the game, one (7.1%) sometimes never consumed food during the first half of the game, and two (14.3%) sometimes consumed food during the first half of the game. See appendix table 57.

There is no statistically significant difference among sports in the influence of pre-game eating practices on halftime eating habits. Out of 58 collegiate and professional football players, 19 (32.8%) said that pre-game eating practices never influenced how they ate at halftime, seven (12.1%) said that pre-game eating practices sometimes never influenced how they ate at halftime, 17 (29.3%) said that pre-game eating practices sometimes influenced how they ate at halftime, 4 (6.9%) said that pre-game eating practices sometimes always influenced how they ate at halftime, and 10 (17.2%) said that pre-game eating practices always influenced how they ate at halftime. Out of 50 collegiate and professional men's basketball players, 17 (34.0%) said that pre-game eating practices never influenced how they ate at halftime, 12 (24.0%) said that pre-game eating practices sometimes never influenced how they ate at halftime, 13 (26.0%) said that pre-game eating practices sometimes influenced how they ate at halftime, four (8.0%) said that pre-game eating practices sometimes always influenced how they ate at halftime, and four

(8.0%) said that pre-game eating practices always influenced how they ate at halftime. Out of 14 collegiate women's basketball players, seven (50.0%) said that pre-game eating practices never influenced how they ate at halftime, two (14.3%) said that pre-game eating practices sometimes never influenced how they ate at halftime, four (28.6%) said that pre-game eating practices sometimes influenced how they ate at halftime, and one (7.1%) said that pre-game eating practices sometimes always influenced how they ate at halftime. See appendix table 58.

There is no statistically significant difference among sports in the influence of first half eating practices on halftime eating habits. Out of 58 collegiate and professional football players, 24 (41.4%) said that first half eating practices never influenced how they ate at halftime, eight (13.8%) said that first half eating practices sometimes never influenced how they ate at halftime, 16 (27.6%) said that first half eating practices sometimes influenced how they ate at halftime, 3 (5.2%) said that first half eating practices sometimes always influenced how they ate at halftime, and 5 (8.6%) said that first half eating practices always influenced how they ate at halftime. Out of 50 collegiate and professional men's basketball players, 26 (52.0%) said that first half eating practices never influenced how they ate at halftime, 13 (26.0%) said that first half eating practices sometimes never influenced how they ate at halftime, seven (14.0%) said that first half eating practices sometimes influenced how they ate at halftime, two (4.0%) said that first half eating practices sometimes always influenced how they ate at halftime, and two (4.0%) said that first half eating practices always influenced how they ate at halftime. Out of 14 collegiate women's basketball players, six (42.9%) said that first half eating practices never influenced how they ate at halftime, two (14.3%) said that first half eating practices sometimes never influenced how they ate at halftime, and five (35.7%) said that first half eating practices sometimes influenced how they ate at halftime. See appendix table 59.

Athlete weight loss during games

There is a statistically significant difference among sports in the extent of weight lost during a game ($p<.001$). Out of 58 collegiate and professional football players, three (5.2%) never lost weight during games, six (10.3%) sometimes never lost weight during games, 15 (25.9%) sometimes lost weight during games, 16 (27.6%) sometimes always lost weight during games, and 16 (27.6%) always lost weight during games. Out of 50 collegiate and professional men's basketball players, six (12.0%) never lost weight during games, 10 (20.0%) sometimes never lost weight during games, 21 (42.0%) sometimes lost weight during games, nine (18.0%) sometimes always lost weight during games, and four (8.0%) always lost weight during games. Out of 14 collegiate women's basketball players, four (28.6%) never lost weight during games, six (42.0%) sometimes never lost weight during games, and three (21.4%) sometimes lost weight during games. See appendix table 60.

The maximum weight lost during a game was 15 pounds (men's basketball player) and the most weight gained during a game was five pounds (women's basketball player). The average weight lost during games among football, men's basketball, and women's basketball players was 2.54 pounds (SD= 2.879).

Summary

In summary, professional organizations recommend the consumption of a 6-8% carbohydrate solution (i.e., Gatorade) during activity (Burns & Clarkson, 2001; Coggan & Coyle, 1991; Kavouras, 2002; Maron, et al., 1996; Osterberg, et al., 2009). It appears that a majority of athletes, whether by team recommendation, team provision or individual preference,

are consuming the recommended beverages (Gatorade, n=99). Water is also consumed by a majority of the athletes who participated in this study. Snacking is less common among athletes, unless in the form of an energy bar. It appears that athletes are taking advantage of the halftime break but it is impossible to see, from this study, if they are using techniques that will aid in enhanced performance during the second half of the game. Pre-game hydration status should also be taken into consideration, but was not evaluated in this study.

CHAPTER FIVE

DISCUSSION AND CONCLUSIONS

Discussion

The results of this study show that athletes have the time and resources to drink and snack at the halftime break to replenish glycogen stores and rehydrate for the second half of games. Athletes, whether by recommendation or by habit, consume a variety of beverages and snacks during the halftime break of games. It is still uncertain as to whether or not these hydration and snacking habits actually replenish glycogen stores and rehydrate the athletes for the second half of games.

The GSSI recommends consumption of a 6% carbohydrate solution every hour during exercise (Burns & Clarkson, 2001). The ACSM recommends consuming a ≤8% carbohydrate solution during exercise (Joint Position, 2000; Joint Position, 2009). The NCAA's general recommendations are that an athlete should consume a 6-8% CHO solution to avoid dehydration (NCAA 2006-2007 Sports Medicine Handbook). Gatorade, a 6% carbohydrate solution, was consumed by 89 (72.95%) of the 122 athletes that were surveyed. Powerade, an 8% carbohydrate solution, was consumed by 41 (33.61%) of the athletes that completed the survey for this study.

The consumption of an 18% carbohydrate solution was recommended specifically by the GSSI for carbohydrate replenishment during the halftime break (Burns & Clarkson, 2001). Gatorlode, an 18% carbohydrate solution, was consumed by 5 (4.10%) of the 122 athletes surveyed. Other beverages consumed during halftime by the 122 athletes surveyed are as follows: XS was consumed by 3 (2.46%), FRS was consumed by 1 (<1.00%), fruit juice was consumed by 7 (5.74%), Hydrate was consumed by 7 (5.74%), Powerade Zero was consumed by

1 (<1.00%), Vitamin Water was consumed by 3 (2.46%), and other beverages were consumed by 6 (4.92%).

The NCAA recommends water as a cost-effective hydration beverage (NCAA 2006-2007 Sports Medicine Handbook). Out of the 122 athletes surveyed, 96 (78.69%) consumed water during the halftime break.

The ACSM recommends consumption of gels, energy bars and other foods (other foods not specified) to meet carbohydrate needs during exercise (Joint Position, 2000; Joint Position, 2009). Energy gels were consumed during halftime by 2 (1.64%) of the 122 athletes surveyed. Energy bars were consumed during halftime by 62 (50.82%) of the 122 athletes surveyed. Other foods consumed during halftime by the 122 athletes surveyed as follows: canned fruit n=7 (5.74%), crackers, pretzels, saltines n=9 (7.38%), fresh fruit n=41 (33.61%), peanut butter n=6 (4.92%), salt free pretzels n=1 (<1%), and other (listed as Snickers bar when specified) n=3 (2.46%).

The NCAA and "Beat the Heat" suggest that fluids be readily available for athletes during practice and games (Gatorade Heat Safety Package 2009). 112 (91.8%) of the 122 athletes surveyed were on teams that provided beverages at halftime and 3 (2.5%) of the 122 athletes provided their own beverages for consumption at halftime. 12 (9.8%) of the 122 athletes surveyed listed the availability of beverages as the strongest influence on their hydration habits at halftime. 115 (94.26%) of the athletes were on teams that sometimes, sometimes always, or always recommended hydrating at halftime. 120 (98.36%) of the athletes were on teams that sometimes, sometimes always, or always made beverages available at halftime and 117 (95.90%) said they were sometimes, sometimes always, or always beverages that they prefer.

The ACSM, the ADA, and the DC recommend hydrating before, during, and after exercise (Joint Position, 2000; Joint Position, 2009). Adequate food and fluid should be consumed before, during, and after exercise to help maintain blood glucose concentration during exercise, maximize exercise performance, and improve recovery time (Burke, et al., 2006; Joint Position, 2009). Energy and macronutrient needs must be met for athletes to maintain body weight, replenish glycogen stores, and provide adequate protein for building and repairing tissue (Joint Position, 2000). Pre-game meal consumption of the 122 athletes surveyed is as follows: 10 (8.20%) consumed their pre-game meal 1-2 hours before kick off/tipoff, 81 (66.39%) consumed their pre-game meal 2.5-4.0 hours before kick off/tipoff and 26 (21.31%) consumed their pre-game meal 4.5-6.0 hours before kick off/tipoff. Out of the 122 athletes surveyed, 106 (86.89%) sometimes, sometimes always, or sometimes consumed fluids between pre-game warm up and kick off/tipoff and 48 (39.34%) sometimes, sometimes always, or always consumed food between the pre-game warm up and kick off/tipoff. Out of the 122 athletes surveyed, 113 (92.62%) consumed fluids during the first half of the game and 28 (22.95%) sometimes, sometimes always, or always consumed food during the first half of the game. Out of the 122 athletes surveyed, 120 (98.36%) of the athletes were on teams that sometimes, sometimes always, or always made beverages available at halftime and 117 (95.90%) said they were sometimes, sometimes always, or always beverages that they prefer. Out of the 122 athletes surveyed, 102 (83.61%) were on teams that sometimes, sometimes always, or always made snacks available at halftime and 103 (84.43%) said they were sometimes, sometimes always, or always snacks that they prefer.

Conclusions

In most cases, athletes follow the recommendations of the ACSM, ADA, DC, GSSI, NATA and NCAA. Most of the athletes are given recommendations to hydrate (n=115) and snack (n=89), showing that coaches and/or trainers are aware of the need to hydrate and snack.

However, this study was not able to demonstrate whether or not they are beginning competition in a hydrated state, which would make halftime a period in which to sustain hydration. If athletes begin competition in a dehydrated state then it would be difficult to become hydrated at halftime. There was also no way determine whether athletes snack to return liver carbohydrate stores to a level that can sustain blood glucose better during the second half. There was also no way to determine if athletes understand why they need to be hydrating and/or snacking at halftime.

Of the beverages consumed, water was consumed by most (n=96) of the athletes surveyed. The drink consumed most often following water, was Gatorade (n=89). Gatorade was the only sports beverage that had a research institute. There is no way to determine from this study if athletes are consuming this beverage because they know how Gatorade's formulation works, their trainers recommend Gatorade, or sponsorship dictates that they drink Gatorade. Athletes were surveyed from 14 different teams; eleven of those teams are sponsored by Gatorade, two teams (at one university) are sponsored by Powerade, and one team's sponsor was not found. Powerade followed Gatorade in drink consumption (n=41). Of the snacks consumed, energy bars were consumed by most (n=62) of the athletes surveyed. The snack consumed most often following energy bars, was fresh fruit (n=31).

Research shows that it might be more beneficial for athletes to consume sports drinks (i.e., Gatorade or Powerade) rather than water during the halftime break. The ingestion of a

beverage containing carbohydrates and electrolytes may help to offset body fluid losses from sweating during exercise in an attempt to attenuate the cardiovascular stress and hyperthermia associated with exercise-induced dehydration (Vrijens & Rehrer, 1999). Since water is consumed by most of the athletes surveyed, it is possible that the benefits, shown by research (Below, et al., 1995; Joint Position, 2009; Maughan & Shirreffs, 2008; Murray, 2007; NATA Position Statement, 2007; Popowski, et al., 2001; Ray, et al., 1998; Rodahl, 2003; Vrijens & Rehrer, 1999) of sports drinks over water are not generally known by athletes and those working closely with them. Cost and palatability may also be factors in beverage choice for athletes at halftime. It is difficult to determine from this study what influences the choice of beverage at halftime as some of the athletes checked multiple answers for that question and those answers were recorded as .00 (n=31). Time playing was checked most as the influence that determines halftime hydration (n=41), followed by temperature (n=21). More influences could have been included on the survey (i.e., cramping, fatigue, knowledge of dehydration, palatability, thirst) to make the question more inclusive. Of the 122 athletes surveyed, 112 said that the team provided beverages at halftime. This appears to be the most influential factor on what beverages are consumed at halftime.

Snacking at halftime is another way for athletes to consume carbohydrates during competition. It is difficult to determine from this study what influences the choice of snack at halftime as some of the athletes checked multiple answers for that question and those answers were recorded as .00 (n=34). Time playing was checked most as the influence that determines halftime snacking (n=39), followed by availability (n=29). More influences could have been included on the survey (i.e., cramping, fatigue, hunger, knowledge of blood glucose levels during exercise, palatability) to make the question more inclusive. Of the 122 athletes surveyed, 93 said

that the team provided snacks at halftime. This appears to be the most influential factor on what snacks are consumed at halftime.

In conclusion we found that athletes are drinking beverages with compositions recommended by the ACSM, ADA, DC, GSSI, NATA and NCAA and they are consuming snacks that could help to replenish liver glycogen stores. However further research will be needed to determine if athletes are actually being rehydrated at halftime and replenishing liver glycogen stores at halftime.

Future studies should be done to determine whether the hydration and snacking habits are maintaining hydration and sustaining blood glucose for better performance. Hydration status prior to game time should be determined as well. If athletes are beginning the game in a dehydrated state, it will be impossible to use the halftime break to become properly hydrated. If a survey is given to collect information, it should be done as an interview to make sure that only the best answer is chosen and that the questions are understood. The survey should be more concise to ensure that more athletes will be willing to fill it out.

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APPENDIX

Table 1: Race breakdown of football, men's basketball and women's basketball players

			Race					
			Bi-racial	African American	Hispanic	Caucasian	Other	Total
Sport	Football	Count	3	42	1	11	1	58
		% within Sport	5.2%	72.4%	1.7%	19.0%	1.7%	100.0%
		% within Race	60.0%	49.4%	50.0%	40.7%	33.3%	47.5%
		% of Total	2.5%	34.4%	.8%	9.0%	.8%	47.5%
	Men's Basketball	Count	2	33	1	12	2	50
		% within Sport	4.0%	66.0%	2.0%	24.0%	4.0%	100.0%
		% within Race	40.0%	38.8%	50.0%	44.4%	66.7%	41.0%
		% of Total	1.6%	27.0%	.8%	9.8%	1.6%	41.0%
	Women's Basketball	Count	0	10	0	4	0	14
		% within Sport	.0%	71.4%	.0%	28.6%	.0%	100.0%
		% within Race	.0%	11.8%	.0%	14.8%	.0%	11.5%
		% of Total	.0%	8.2%	.0%	3.3%	.0%	11.5%
Total		Count	5	85	2	27	3	122
		% within Sport	4.1%	69.7%	1.6%	22.1%	2.5%	100.0%
		% within Race	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	4.1%	69.7%	1.6%	22.1%	2.5%	100.0%

Table 2: Height and weight of football, men's basketball and women's basketball players					
	N	Minimum	Maximum	Mean	Std. Deviation
Height (in)	122	63.00	84.00	74.7664	4.37507
Height (cm)	122	160.02	213.36	189.7817	11.10525
Weight (lb)	121	130.00	330.00	220.3347	45.77442
Weight (kg)	121	59.09	150.00	100.0465	20.86248
Valid N (listwise)	121				

Table 3: Setting of competition between football, men's basketball and women's basketball players					
		Setting			
		Indoors	Outdoors	Both	Total
Football	Count	0	42	16	58
	% within Sport	.0%	72.4%	27.6%	100.0%
	% within Setting	.0%	100.0%	76.2%	47.5%
	% of Total	.0%	34.4%	13.1%	47.5%
Men's Basketball	Count	47	0	3	50
	% within Sport	94.0%	.0%	6.0%	100.0%
	% within Setting	79.7%	.0%	14.3%	41.0%
	% of Total	38.5%	.0%	2.5%	41.0%
Women's Basketball	Count	12	0	2	14
	% within Sport	85.7%	.0%	14.3%	100.0%
	% within Setting	20.3%	.0%	9.5%	11.5%
	% of Total	9.8%	.0%	1.6%	11.5%
Total	Count	59	42	21	122
	% within Sport	48.4%	34.4%	17.2%	100.0%
	% within Setting	100.0%	100.0%	100.0%	100.0%
	% of Total	48.4%	34.4%	17.2%	100.0%

Table 4: Years played in college by football, men's basketball and women's basketball players								
			Years Played-College						
			0	1	2	3	4	5	Total
Sport	Football	Count	1	13	15	14	15	0	58
		% within Sport	1.7%	22.4%	25.9%	24.1%	25.9%	.0%	100.0%
		% within Years Played-College	25.0%	43.3%	51.7%	46.7%	53.6%	.0%	47.5%
		% of Total	.8%	10.7%	12.3%	11.5%	12.3%	.0%	47.5%
	Men's Basketball	Count	2	15	10	13	10	0	50
		% within Sport	4.0%	30.0%	20.0%	26.0%	20.0%	.0%	100.0%
		% within Years Played-College	50.0%	50.0%	34.5%	43.3%	35.7%	.0%	41.0%
		% of Total	1.6%	12.3%	8.2%	10.7%	8.2%	.0%	41.0%
	Women's Basketball	Count	1	2	4	3	3	1	14
		% within Sport	7.1%	14.3%	28.6%	21.4%	21.4%	7.1%	100.0%
		% within Years Played-College	25.0%	6.7%	13.8%	10.0%	10.7%	100.0%	11.5%
		% of Total	.8%	1.6%	3.3%	2.5%	2.5%	.8%	11.5%
Total		Count	4	30	29	30	28	1	122
		% within Sport	3.3%	24.6%	23.8%	24.6%	23.0%	.8%	100.0%
		% within Years Played-College	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	3.3%	24.6%	23.8%	24.6%	23.0%	.8%	100.0%

Table 5: Years red shirted in college by football, men's basketball and women's basketball players					
		Years Redshirt-College			
		0	1	2	Total
Football	Count	21	35	2	58
	% within Sport	36.2%	60.3%	3.4%	100.0%
	% within Years Redshirt-College	32.3%	71.4%	25.0%	47.5%
	% of Total	17.2%	28.7%	1.6%	47.5%
Men's Basketball	Count	33	11	6	50
	% within Sport	66.0%	22.0%	12.0%	100.0%
	% within Years Redshirt-College	50.8%	22.4%	75.0%	41.0%
	% of Total	27.0%	9.0%	4.9%	41.0%
Women's Basketball	Count	11	3	0	14
	% within Sport	78.6%	21.4%	.0%	100.0%
	% within Years Redshirt-College	16.9%	6.1%	.0%	11.5%
	% of Total	9.0%	2.5%	.0%	11.5%
Total	Count	65	49	8	122
	% within Sport	53.3%	40.2%	6.6%	100.0%
	% within Years Redshirt-College	100.0%	100.0%	100.0%	100.0%
	% of Total	53.3%	40.2%	6.6%	100.0%

Table 6: Years played at professional level among football, men's basketball and women's basketball players

			Years Professional					
			0	1-3	4-8	9-12	13-15	Total
Sport	Football	Count	51	4	3	0	0	58
		% within Sport	87.9%	6.9%	5.2%	.0%	.0%	100.0%
		% within Years Professional	51.5%	36.4%	30.0%	.0%	.0%	47.5%
		% of Total	41.8%	3.3%	2.5%	.0%	.0%	47.5%
	Men's Basketball	Count	34	7	7	1	1	50
		% within Sport	68.0%	14.0%	14.0%	2.0%	2.0%	100.0%
		% within Years Professional	34.3%	63.6%	70.0%	100.0%	100.0%	41.0%
		% of Total	27.9%	5.7%	5.7%	.8%	.8%	41.0%
	Women's Basketball	Count	14	0	0	0	0	14
		% within Sport	100.0%	.0%	.0%	.0%	.0%	100.0%
		% within Years Professional	14.1%	.0%	.0%	.0%	.0%	11.5%
		% of Total	11.5%	.0%	.0%	.0%	.0%	11.5%
Total		Count	99	11	10	1	1	122
		% within Sport	81.1%	9.0%	8.2%	.8%	.8%	100.0%
		% within Years Professional	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	81.1%	9.0%	8.2%	.8%	.8%	100.0%

Table 7: Minutes available at halftime for beverages and snacks among football, men's basketball, and women's basketball players

			Minutes for Snack/Bev					
			0	0-5	6-10	11-15	16-20	Total
Sport	Football	Count	0	2	19	20	17	58
		% within Sport	.0%	3.4%	32.8%	34.5%	29.3%	100.0%
		% within Minutes for Snack/Bev	.0%	15.4%	39.6%	51.3%	81.0%	47.5%
		% of Total	.0%	1.6%	15.6%	16.4%	13.9%	47.5%
	Men's Basketball	Count	0	8	25	15	2	50
		% within Sport	.0%	16.0%	50.0%	30.0%	4.0%	100.0%
		% within Minutes for Snack/Bev	.0%	61.5%	52.1%	38.5%	9.5%	41.0%
		% of Total	.0%	6.6%	20.5%	12.3%	1.6%	41.0%
	Women's Basketball	Count	1	3	4	4	2	14
		% within Sport	7.1%	21.4%	28.6%	28.6%	14.3%	100.0%
		% within Minutes for Snack/Bev	100.0%	23.1%	8.3%	10.3%	9.5%	11.5%
		% of Total	.8%	2.5%	3.3%	3.3%	1.6%	11.5%
Total		Count	1	13	48	39	21	122
		% within Sport	.8%	10.7%	39.3%	32.0%	17.2%	100.0%
		% within Minutes for Snack/Bev	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	.8%	10.7%	39.3%	32.0%	17.2%	100.0%

Table 8: Comparison of XS consumption between football, men's basketball and women's basketball				
		XS		
		0	1-2 Cups	Total
Football	Count	58	0	58
	% within Sport	100.0%	.0%	100.0%
	% within Excess	48.7%	.0%	47.5%
	% of Total	47.5%	.0%	47.5%
Men's Basketball	Count	47	3	50
	% within Sport	94.0%	6.0%	100.0%
	% within Excess	39.5%	100.0%	41.0%
	% of Total	38.5%	2.5%	41.0%
Women's Basketball	Count	14	0	14
	% within Sport	100.0%	.0%	100.0%
	% within Excess	11.8%	.0%	11.5%
	% of Total	11.5%	.0%	11.5%
Total	Count	119	3	122
	% within Sport	97.5%	2.5%	100.0%
	% within Excess	100.0%	100.0%	100.0%
	% of Total	97.5%	2.5%	100.0%
Pearson Chi Square: .109				

Table 9: Comparison of FRS Energy Drink consumption between football, men's basketball and women's basketball

		FRS Energy Drink		
		0	1-2 Cups	Total
Football	Count	58	0	58
	% within Sport	100.0%	.0%	100.0%
	% within FRS Energy Drink	47.9%	.0%	47.5%
	% of Total	47.5%	.0%	47.5%
Men's Basketball	Count	49	1	50
	% within Sport	98.0%	2.0%	100.0%
	% within FRS Energy Drink	40.5%	100.0%	41.0%
	% of Total	40.2%	.8%	41.0%
Women's Basketball	Count	14	0	14
	% within Sport	100.0%	.0%	100.0%
	% within FRS Energy Drink	11.6%	.0%	11.5%
	% of Total	11.5%	.0%	11.5%
Total	Count	121	1	122
	% within Sport	99.2%	.8%	100.0%
	% within FRS Energy Drink	100.0%	100.0%	100.0%
	% of Total	99.2%	.8%	100.0%
Pearson Chi Square: .484				

Table 10: Comparison of fruit juice consumption between football, men's basketball and women's basketball

		Fruit Juice				
		0	1/2 Cup	1-2 Cups	3-4 Cups	Total
Football	Count	56	1	1	0	58
	% within Sport	96.6%	1.7%	1.7%	.0%	100.0%
	% within Fruit Juice	48.7%	33.3%	33.3%	.0%	47.5%
	% of Total	45.9%	.8%	.8%	.0%	47.5%
Men's Basketball	Count	46	2	2	0	50
	% within Sport	92.0%	4.0%	4.0%	.0%	100.0%
	% within Fruit Juice	40.0%	66.7%	66.7%	.0%	41.0%
	% of Total	37.7%	1.6%	1.6%	.0%	41.0%
Women's Basketball	Count	13	0	0	1	14
	% within Sport	92.9%	.0%	.0%	7.1%	100.0%
	% within Fruit Juice	11.3%	.0%	.0%	100.0%	11.5%
	% of Total	10.7%	.0%	.0%	.8%	11.5%
Total	Count	115	3	3	1	122
	% within Sport	94.3%	2.5%	2.5%	.8%	100.0%
	% within Fruit Juice	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	94.3%	2.5%	2.5%	.8%	100.0%
Pearson Chi Square: .139						

Table 11: Comparison of Gatorade consumption between football, men's basketball and women's basketball

			Gatorade					
			0	1/2 Cup	1-2 Cups	3-4 Cups	> 4 Cups	Total
Sport	Football	Count	15	3	31	9	0	58
		% within Sport	25.9%	5.2%	53.4%	15.5%	.0%	100.0%
		% within Gatorade	45.5%	50.0%	50.8%	52.9%	.0%	47.5%
		% of Total	12.3%	2.5%	25.4%	7.4%	.0%	47.5%
	Men's Basketball	Count	11	1	26	7	5	50
		% within Sport	22.0%	2.0%	52.0%	14.0%	10.0%	100.0%
		% within Gatorade	33.3%	16.7%	42.6%	41.2%	100.0%	41.0%
		% of Total	9.0%	.8%	21.3%	5.7%	4.1%	41.0%
	Women's Basketball	Count	7	2	4	1	0	14
		% within Sport	50.0%	14.3%	28.6%	7.1%	.0%	100.0%
		% within Gatorade	21.2%	33.3%	6.6%	5.9%	.0%	11.5%
		% of Total	5.7%	1.6%	3.3%	.8%	.0%	11.5%
Total		Count	33	6	61	17	5	122
		% within Sport	27.0%	4.9%	50.0%	13.9%	4.1%	100.0%
		% within Gatorade	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	27.0%	4.9%	50.0%	13.9%	4.1%	100.0%
Pearson Chi Square: .045								

Table 12: Comparison of Gatorlode consumption between football, men's basketball and women's basketball

		Gatorlode			
		0	1-2 Cups	3-4 Cups	Total
Football	Count	55	3	0	58
	% within Sport	94.8%	5.2%	.0%	100.0%
	% within Gatorload	47.0%	100.0%	.0%	47.5%
	% of Total	45.1%	2.5%	.0%	47.5%
Men's Basketball	Count	48	0	2	50
	% within Sport	96.0%	.0%	4.0%	100.0%
	% within Gatorload	41.0%	.0%	100.0%	41.0%
	% of Total	39.3%	.0%	1.6%	41.0%
Women's Basketball	Count	14	0	0	14
	% within Sport	100.0%	.0%	.0%	100.0%
	% within Gatorload	12.0%	.0%	.0%	11.5%
	% of Total	11.5%	.0%	.0%	11.5%
Total	Count	117	3	2	122
	% within Sport	95.9%	2.5%	1.6%	100.0%
	% within Gatorload	100.0%	100.0%	100.0%	100.0%
	% of Total	95.9%	2.5%	1.6%	100.0%

Pearson Chi Square: .183

Table 13: Comparison of Hydrate consumption between football, men's basketball and women's basketball

		Hydrate				
		0	1-2 Cups	3-4 Cups	> 4 Cups	Total
Football	Count	54	2	1	1	58
	% within Sport	93.1%	3.4%	1.7%	1.7%	100.0%
	% within Hydrate	47.0%	40.0%	100.0%	100.0%	47.5%
	% of Total	44.3%	1.6%	.8%	.8%	47.5%
Men's Basketball	Count	47	3	0	0	50
	% within Sport	94.0%	6.0%	.0%	.0%	100.0%
	% within Hydrate	40.9%	60.0%	.0%	.0%	41.0%
	% of Total	38.5%	2.5%	.0%	.0%	41.0%
Women's Basketball	Count	14	0	0	0	14
	% within Sport	100.0%	.0%	.0%	.0%	100.0%
	% within Hydrate	12.2%	.0%	.0%	.0%	11.5%
	% of Total	11.5%	.0%	.0%	.0%	11.5%
Total	Count	115	5	1	1	122
	% within Sport	94.3%	4.1%	.8%	.8%	100.0%
	% within Hydrate	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	94.3%	4.1%	.8%	.8%	100.0%
Pearson Chi Square: .765						

Table 14: Comparison of Powerade consumption between football, men's basketball and women's basketball

			Powerade				
			0	1/2 Cup	1-2 Cups	3-4 Cups	Total
Sport	Football	Count	42	1	15	0	58
		% within Sport	72.4%	1.7%	25.9%	.0%	100.0%
		% within Powerade	51.9%	25.0%	45.5%	.0%	47.5%
		% of Total	34.4%	.8%	12.3%	.0%	47.5%
	Men's Basketball	Count	32	2	16	0	50
		% within Sport	64.0%	4.0%	32.0%	.0%	100.0%
		% within Powerade	39.5%	50.0%	48.5%	.0%	41.0%
		% of Total	26.2%	1.6%	13.1%	.0%	41.0%
	Women's Basketball	Count	7	1	2	4	14
		% within Sport	50.0%	7.1%	14.3%	28.6%	100.0%
		% within Powerade	8.6%	25.0%	6.1%	100.0%	11.5%
		% of Total	5.7%	.8%	1.6%	3.3%	11.5%
Total		Count	81	4	33	4	122
		% within Sport	66.4%	3.3%	27.0%	3.3%	100.0%
		% within Powerade	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	66.4%	3.3%	27.0%	3.3%	100.0%
Pearson Chi Square: <.001							

Table 15: Comparison of Powerade Zero consumption between football, men's basketball and women's basketball				
		Powerade Zero		
		0	1-2 Cups	Total
Football	Count	58	0	58
	% within Sport	100.0%	.0%	100.0%
	% within Powerade Zero	47.9%	.0%	47.5%
	% of Total	47.5%	.0%	47.5%
Men's Basketball	Count	50	0	50
	% within Sport	100.0%	.0%	100.0%
	% within Powerade Zero	41.3%	.0%	41.0%
	% of Total	41.0%	.0%	41.0%
Women's Basketball	Count	13	1	14
	% within Sport	92.9%	7.1%	100.0%
	% within Powerade Zero	10.7%	100.0%	11.5%
	% of Total	10.7%	.8%	11.5%
Total	Count	121	1	122
	% within Sport	99.2%	.8%	100.0%
	% within Powerade Zero	100.0%	100.0%	100.0%
	% of Total	99.2%	.8%	100.0%
Pearson Chi Square: .020				

Table 16: Comparison of Vitamin Water consumption between football, men's basketball and women's basketball					
		Vitamin Water			
		0	1-2 Cups	3-4 Cups	Total
Football	Count	57	1	0	58
	% within Sport	98.3%	1.7%	.0%	100.0%
	% within Vitamin Water	47.9%	50.0%	.0%	47.5%
	% of Total	46.7%	.8%	.0%	47.5%
Men's Basketball	Count	48	1	1	50
	% within Sport	96.0%	2.0%	2.0%	100.0%
	% within Vitamin Water	40.3%	50.0%	100.0%	41.0%
	% of Total	39.3%	.8%	.8%	41.0%
Women's Basketball	Count	14	0	0	14
	% within Sport	100.0%	.0%	.0%	100.0%
	% within Vitamin Water	11.8%	.0%	.0%	11.5%
	% of Total	11.5%	.0%	.0%	11.5%
Total	Count	119	2	1	122
	% within Sport	97.5%	1.6%	.8%	100.0%
	% within Vitamin Water	100.0%	100.0%	100.0%	100.0%
	% of Total	97.5%	1.6%	.8%	100.0%
Pearson Chi Square: .784					

Table 17: Comparison of water consumption between football, men's basketball and women's basketball								
			Water					
			0	1/2 Cup	1-2 Cups	3-4 Cups	> 4 Cups	Total
Sport	Football	Count	16	5	28	8	1	58
		% within Sport	27.6%	8.6%	48.3%	13.8%	1.7%	100.0%
		% within Water	61.5%	41.7%	47.5%	42.1%	16.7%	47.5%
		% of Total	13.1%	4.1%	23.0%	6.6%	.8%	47.5%
	Men's Basketball	Count	8	3	27	7	5	50
		% within Sport	16.0%	6.0%	54.0%	14.0%	10.0%	100.0%
		% within Water	30.8%	25.0%	45.8%	36.8%	83.3%	41.0%
		% of Total	6.6%	2.5%	22.1%	5.7%	4.1%	41.0%
	Women's Basketball	Count	2	4	4	4	0	14
		% within Sport	14.3%	28.6%	28.6%	28.6%	.0%	100.0%
		% within Water	7.7%	33.3%	6.8%	21.1%	.0%	11.5%
		% of Total	1.6%	3.3%	3.3%	3.3%	.0%	11.5%
Total		Count	26	12	59	19	6	122
		% within Sport	21.3%	9.8%	48.4%	15.6%	4.9%	100.0%
		% within Water	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	21.3%	9.8%	48.4%	15.6%	4.9%	100.0%
Pearson Chi Square: .049								

Table 18: Comparison of other beverage consumption between football, men's basketball and women's basketball

			Other Beverage				
			0	1/2 Cup	1-2 Cups	> 4 Cups	Total
Sport	Football	Count	53	2	3	0	58
		% within Sport	91.4%	3.4%	5.2%	.0%	100.0%
		% within Other Beverage	45.7%	100.0%	100.0%	.0%	47.5%
		% of Total	43.4%	1.6%	2.5%	.0%	47.5%
	Men's Basketball	Count	49	0	0	1	50
		% within Sport	98.0%	.0%	.0%	2.0%	100.0%
		% within Other Beverage	42.2%	.0%	.0%	100.0%	41.0%
		% of Total	40.2%	.0%	.0%	.8%	41.0%
	Women's Basketball	Count	14	0	0	0	14
		% within Sport	100.0%	.0%	.0%	.0%	100.0%
		% within Other Beverage	12.1%	.0%	.0%	.0%	11.5%
		% of Total	11.5%	.0%	.0%	.0%	11.5%
Total		Count	116	2	3	1	122
		% within Sport	95.1%	1.6%	2.5%	.8%	100.0%
		% within Other Beverage	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	95.1%	1.6%	2.5%	.8%	100.0%
Pearson Chi Square: .310							

Table 19: Comparison of canned fruit consumption between football, men's basketball and women's basketball

			Canned Fruit				
			0	1/2 Can	1 Can	> 1.5 Can	Total
Sport	Football	Count	56	1	1	0	58
		% within Sport	96.6%	1.7%	1.7%	.0%	100.0%
		% within Canned Fruit	48.7%	25.0%	50.0%	.0%	47.5%
		% of Total	45.9%	.8%	.8%	.0%	47.5%
	Men's Basketball	Count	46	2	1	1	50
		% within Sport	92.0%	4.0%	2.0%	2.0%	100.0%
		% within Canned Fruit	40.0%	50.0%	50.0%	100.0%	41.0%
		% of Total	37.7%	1.6%	.8%	.8%	41.0%
	Women's Basketball	Count	13	1	0	0	14
		% within Sport	92.9%	7.1%	.0%	.0%	100.0%
		% within Canned Fruit	11.3%	25.0%	.0%	.0%	11.5%
		% of Total	10.7%	.8%	.0%	.0%	11.5%
Total		Count	115	4	2	1	122
		% within Sport	94.3%	3.3%	1.6%	.8%	100.0%
		% within Canned Fruit	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	94.3%	3.3%	1.6%	.8%	100.0%

Pearson Chi Square: .819

Table 20: Comparison of crackers, pretzels, or saltine consumption between football, men's basketball and women's basketball

		Crackers, pretzels, saltines		
		0	1/2 Cup	Total
Football	Count	56	2	58
	% within Sport	96.6%	3.4%	100.0%
	% within Crackers, pretzels, saltines	49.6%	22.2%	47.5%
	% of Total	45.9%	1.6%	47.5%
Men's Basketball	Count	44	6	50
	% within Sport	88.0%	12.0%	100.0%
	% within Crackers, pretzels, saltines	38.9%	66.7%	41.0%
	% of Total	36.1%	4.9%	41.0%
Women's Basketball	Count	13	1	14
	% within Sport	92.9%	7.1%	100.0%
	% within Crackers, pretzels, saltines	11.5%	11.1%	11.5%
	% of Total	10.7%	.8%	11.5%
Total	Count	113	9	122
	% within Sport	92.6%	7.4%	100.0%
	% within Crackers, pretzels, saltines	100.0%	100.0%	100.0%
	% of Total	92.6%	7.4%	100.0%
Pearson Chi Square: .237				

Table 21: Comparison of energy bar consumption between football, men's basketball and women's basketball

			Energy Bar					
			0	1/2 Bar	1 Bar	1.5 Bar	> 1.5 Bars	Total
Sport	Football	Count	13	15	26	3	1	58
		% within Sport	22.4%	25.9%	44.8%	5.2%	1.7%	100.0%
		% within Energy Bar	21.7%	71.4%	72.2%	75.0%	100.0%	47.5%
		% of Total	10.7%	12.3%	21.3%	2.5%	.8%	47.5%
	Men's Basketball	Count	35	5	9	1	0	50
		% within Sport	70.0%	10.0%	18.0%	2.0%	.0%	100.0%
		% within Energy Bar	58.3%	23.8%	25.0%	25.0%	.0%	41.0%
		% of Total	28.7%	4.1%	7.4%	.8%	.0%	41.0%
	Women's Basketball	Count	12	1	1	0	0	14
		% within Sport	85.7%	7.1%	7.1%	.0%	.0%	100.0%
		% within Energy Bar	20.0%	4.8%	2.8%	.0%	.0%	11.5%
		% of Total	9.8%	.8%	.8%	.0%	.0%	11.5%
Total		Count	60	21	36	4	1	122
		% within Sport	49.2%	17.2%	29.5%	3.3%	.8%	100.0%
		% within Energy Bar	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	49.2%	17.2%	29.5%	3.3%	.8%	100.0%
Pearson Chi Square: <.001								

Table 22: Comparison of energy gel consumption between football, men's basketball and women's basketball

		Energy gel			
		0	1/2 Pack	1 Pack	Total
Football	Count	57	0	1	58
	% within Sport	98.3%	.0%	1.7%	100.0%
	% within Energy gel	47.5%	.0%	100.0%	47.5%
	% of Total	46.7%	.0%	.8%	47.5%
Men's Basketball	Count	49	1	0	50
	% within Sport	98.0%	2.0%	.0%	100.0%
	% within Energy gel	40.8%	100.0%	.0%	41.0%
	% of Total	40.2%	.8%	.0%	41.0%
Women's Basketball	Count	14	0	0	14
	% within Sport	100.0%	.0%	.0%	100.0%
	% within Energy gel	11.7%	.0%	.0%	11.5%
	% of Total	11.5%	.0%	.0%	11.5%
Total	Count	120	1	1	122
	% within Sport	98.4%	.8%	.8%	100.0%
	% within Energy gel	100.0%	100.0%	100.0%	100.0%
	% of Total	98.4%	.8%	.8%	100.0%
Pearson Chi Square: .636					

Table 23: Comparison of fresh fruit consumption between football, men's basketball and women's basketball

			Fresh fruit					
			0	1/2 Fruit	1 Fruit	1.5 Fruits	> 1.5 Fruits	Total
Sport	Football	Count	33	7	12	4	2	58
		% within Sport	56.9%	12.1%	20.7%	6.9%	3.4%	100.0%
		% within Fresh fruit	40.7%	38.9%	85.7%	66.7%	66.7%	47.5%
		% of Total	27.0%	5.7%	9.8%	3.3%	1.6%	47.5%
	Men's Basketball	Count	35	11	1	2	1	50
		% within Sport	70.0%	22.0%	2.0%	4.0%	2.0%	100.0%
		% within Fresh fruit	43.2%	61.1%	7.1%	33.3%	33.3%	41.0%
		% of Total	28.7%	9.0%	.8%	1.6%	.8%	41.0%
	Women's Basketball	Count	13	0	1	0	0	14
		% within Sport	92.9%	.0%	7.1%	.0%	.0%	100.0%
		% within Fresh fruit	16.0%	.0%	7.1%	.0%	.0%	11.5%
		% of Total	10.7%	.0%	.8%	.0%	.0%	11.5%
Total		Count	81	18	14	6	3	122
		% within Sport	66.4%	14.8%	11.5%	4.9%	2.5%	100.0%
		% within Fresh fruit	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	66.4%	14.8%	11.5%	4.9%	2.5%	100.0%
Pearson Chi Square: .033								

Table 24: Comparison of peanut butter consumption between football, men's basketball and women's basketball

		Peanut butter			
		0	1/2 Tbsp	1 Tbsp	Total
Football	Count	57	0	1	58
	% within Sport	98.3%	.0%	1.7%	100.0%
	% within Peanut butter	49.1%	.0%	100.0%	47.5%
	% of Total	46.7%	.0%	.8%	47.5%
Men's Basketball	Count	45	5	0	50
	% within Sport	90.0%	10.0%	.0%	100.0%
	% within Peanut butter	38.8%	100.0%	.0%	41.0%
	% of Total	36.9%	4.1%	.0%	41.0%
Women's Basketball	Count	14	0	0	14
	% within Sport	100.0%	.0%	.0%	100.0%
	% within Peanut butter	12.1%	.0%	.0%	11.5%
	% of Total	11.5%	.0%	.0%	11.5%
Total	Count	116	5	1	122
	% within Sport	95.1%	4.1%	.8%	100.0%
	% within Peanut butter	100.0%	100.0%	100.0%	100.0%
	% of Total	95.1%	4.1%	.8%	100.0%
Pearson Chi Square: .074					

Table 25: Comparison of salt free pretzel consumption between football, men's basketball and women's basketball

		Salt free pretzels		
		0	1/2 Cup	Total
Football	Count	58	0	58
	% within Sport	100.0%	.0%	100.0%
	% within Salt free pretzels	47.9%	.0%	47.5%
	% of Total	47.5%	.0%	47.5%
Men's Basketball	Count	49	1	50
	% within Sport	98.0%	2.0%	100.0%
	% within Salt free pretzels	40.5%	100.0%	41.0%
	% of Total	40.2%	.8%	41.0%
Women's Basketball	Count	14	0	14
	% within Sport	100.0%	.0%	100.0%
	% within Salt free pretzels	11.6%	.0%	11.5%
	% of Total	11.5%	.0%	11.5%
Total	Count	121	1	122
	% within Sport	99.2%	.8%	100.0%
	% within Salt free pretzels	100.0%	100.0%	100.0%
	% of Total	99.2%	.8%	100.0%
Pearson Chi Square: .484				

Table 26: Comparison of other snack consumption between football, men's basketball and women's basketball

			Other snack				
			0	1	1.5	>1.5	Total
Sport	Football	Count	57	0	1	0	58
		% within Sport	98.3%	.0%	1.7%	.0%	100.0%
		% within Other snack	47.9%	.0%	100.0%	.0%	47.5%
		% of Total	46.7%	.0%	.8%	.0%	47.5%
	Men's Basketball	Count	49	0	0	1	50
		% within Sport	98.0%	.0%	.0%	2.0%	100.0%
		% within Other snack	41.2%	.0%	.0%	100.0%	41.0%
		% of Total	40.2%	.0%	.0%	.8%	41.0%
	Women's Basketball	Count	13	1	0	0	14
		% within Sport	92.9%	7.1%	.0%	.0%	100.0%
		% within Other snack	10.9%	100.0%	.0%	.0%	11.5%
		% of Total	10.7%	.8%	.0%	.0%	11.5%
Total		Count	119	1	1	1	122
		% within Sport	97.5%	.8%	.8%	.8%	100.0%
		% within Other snack	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	97.5%	.8%	.8%	.8%	100.0%
Pearson Chi Square: .113							

Table 27: Comparison of drink purchase by athlete or team between football, men's basketball and women's basketball

			Purchased by You/Team			
			.00	Purchased by athlete	Purchased by team	Total
Sport	Football	Count	2	1	55	58
		% within Sport	3.4%	1.7%	94.8%	100.0%
		% within Purchased by You/Team	28.6%	33.3%	49.1%	47.5%
		% of Total	1.6%	.8%	45.1%	47.5%
	Men's Basketball	Count	4	2	44	50
		% within Sport	8.0%	4.0%	88.0%	100.0%
		% within Purchased by You/Team	57.1%	66.7%	39.3%	41.0%
		% of Total	3.3%	1.6%	36.1%	41.0%
	Women's Basketball	Count	1	0	13	14
		% within Sport	7.1%	.0%	92.9%	100.0%
		% within Purchased by You/Team	14.3%	.0%	11.6%	11.5%
		% of Total	.8%	.0%	10.7%	11.5%
Total		Count	7	3	112	122
		% within Sport	5.7%	2.5%	91.8%	100.0%
		% within Purchased by You/Team	100.0%	100.0%	100.0%	100.0%
		% of Total	5.7%	2.5%	91.8%	100.0%
Pearson Chi Square: .714						

Table 28: Comparison of frequency of halftime hydration habits between football, men's basketball and women's basketball

			Halftime Hydration						
			.00	Never	Sometimes never	Sometimes	Sometimes always	Always	Total
Sport	Football	Count	0	0	2	20	20	16	58
		% within Sport	.0%	.0%	3.4%	34.5%	34.5%	27.6%	100.0%
		% within Halftime Hydration	.0%	.0%	28.6%	47.6%	54.1%	47.1%	47.5%
		% of Total	.0%	.0%	1.6%	16.4%	16.4%	13.1%	47.5%
	Men's Basketball	Count	1	0	3	19	12	15	50
		% within Sport	2.0%	.0%	6.0%	38.0%	24.0%	30.0%	100.0%
		% within Halftime Hydration	100.0%	.0%	42.9%	45.2%	32.4%	44.1%	41.0%
		% of Total	.8%	.0%	2.5%	15.6%	9.8%	12.3%	41.0%
	Women's Basketball	Count	0	1	2	3	5	3	14
		% within Sport	.0%	7.1%	14.3%	21.4%	35.7%	21.4%	100.0%
		% within Halftime Hydration	.0%	100.0%	28.6%	7.1%	13.5%	8.8%	11.5%
		% of Total	.0%	.8%	1.6%	2.5%	4.1%	2.5%	11.5%
Total		Count	1	1	7	42	37	34	122
		% within Sport	.8%	.8%	5.7%	34.4%	30.3%	27.9%	100.0%
		% within Halftime Hydration	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	.8%	.8%	5.7%	34.4%	30.3%	27.9%	100.0%
Pearson Chi Square: .184									

Table 29: Comparison of influences that determine halftime hydration habits between football, men's basketball and women's basketball

			Hydration Influence						
			.00	Availability	Difficulty of Game	Team Requirement	Temperature	Time Playing	Total
Sport	Football	Count	14	4	7	0	16	17	58
		% within Sport	24.1%	6.9%	12.1%	.0%	27.6%	29.3%	100.0%
		% within Hydration Influence	45.2%	33.3%	46.7%	.0%	76.2%	41.5%	47.5%
		% of Total	11.5%	3.3%	5.7%	.0%	13.1%	13.9%	47.5%
	Men's Basketball	Count	13	8	7	2	2	18	50
		% within Sport	26.0%	16.0%	14.0%	4.0%	4.0%	36.0%	100.0%
		% within Hydration Influence	41.9%	66.7%	46.7%	100.0%	9.5%	43.9%	41.0%
		% of Total	10.7%	6.6%	5.7%	1.6%	1.6%	14.8%	41.0%
	Women's Basketball	Count	4	0	1	0	3	6	14
		% within Sport	28.6%	.0%	7.1%	.0%	21.4%	42.9%	100.0%
		% within Hydration Influence	12.9%	.0%	6.7%	.0%	14.3%	14.6%	11.5%
		% of Total	3.3%	.0%	.8%	.0%	2.5%	4.9%	11.5%
Total		Count	31	12	15	2	21	41	122
		% within Sport	25.4%	9.8%	12.3%	1.6%	17.2%	33.6%	100.0%
		% within Hydration Influence	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	25.4%	9.8%	12.3%	1.6%	17.2%	33.6%	100.0%
Pearson Chi Square: .078									

Table 30: Comparison of snack purchase by athlete or team between football, men's basketball and women's basketball

			Purchased by You/Team			
			.00	Purchased by athlete	Purchased by team	Total
Sport	Football	Count	5	2	51	58
		% within Sport	8.6%	3.4%	87.9%	100.0%
		% within Purchased by You/Team	22.7%	28.6%	54.8%	47.5%
		% of Total	4.1%	1.6%	41.8%	47.5%
	Men's Basketball	Count	10	4	36	50
		% within Sport	20.0%	8.0%	72.0%	100.0%
		% within Purchased by You/Team	45.5%	57.1%	38.7%	41.0%
		% of Total	8.2%	3.3%	29.5%	41.0%
	Women's Basketball	Count	7	1	6	14
		% within Sport	50.0%	7.1%	42.9%	100.0%
		% within Purchased by You/Team	31.8%	14.3%	6.5%	11.5%
		% of Total	5.7%	.8%	4.9%	11.5%
Total		Count	22	7	93	122
		% within Sport	18.0%	5.7%	76.2%	100.0%
		% within Purchased by You/Team	100.0%	100.0%	100.0%	100.0%
		% of Total	18.0%	5.7%	76.2%	100.0%
Pearson Chi Square: .004						

Table 31: Comparison of frequency of halftime snacking habits between football, men's basketball and women's basketball

			Halftime Snack						
			0	Never	Sometimes never	Sometimes	Sometimes always	Always	Total
Sport	Football	Count	1	4	7	24	11	11	58
		% within Sport	1.7%	6.9%	12.1%	41.4%	19.0%	19.0%	100.0%
		% within Halftime Snack	12.5%	21.1%	35.0%	52.2%	84.6%	68.8%	47.5%
		% of Total	.8%	3.3%	5.7%	19.7%	9.0%	9.0%	47.5%
	Men's Basketball	Count	2	13	10	21	1	3	50
		% within Sport	4.0%	26.0%	20.0%	42.0%	2.0%	6.0%	100.0%
		% within Halftime Snack	25.0%	68.4%	50.0%	45.7%	7.7%	18.8%	41.0%
		% of Total	1.6%	10.7%	8.2%	17.2%	.8%	2.5%	41.0%
	Women's Basketball	Count	5	2	3	1	1	2	14
		% within Sport	35.7%	14.3%	21.4%	7.1%	7.1%	14.3%	100.0%
		% within Halftime Snack	62.5%	10.5%	15.0%	2.2%	7.7%	12.5%	11.5%
		% of Total	4.1%	1.6%	2.5%	.8%	.8%	1.6%	11.5%
Total		Count	8	19	20	46	13	16	122
		% within Sport	6.6%	15.6%	16.4%	37.7%	10.7%	13.1%	100.0%
		% within Halftime Snack	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	6.6%	15.6%	16.4%	37.7%	10.7%	13.1%	100.0%
Pearson Chi Square: <.001									

Table 32: Comparison of influences that determine halftime snacking habits between football, men's basketball and women's basketball

			Snack Influence						
			0	Availability	Difficulty of Game	Team Requirement	Temperature	Time Playing	Total
Sport	Football	Count	11	9	11	1	4	22	58
		% within Sport	19.0%	15.5%	19.0%	1.7%	6.9%	37.9%	100.0%
		% within Snack Influence	32.4%	31.0%	84.6%	50.0%	80.0%	56.4%	47.5%
		% of Total	9.0%	7.4%	9.0%	.8%	3.3%	18.0%	47.5%
	Men's Basketball	Count	16	14	1	1	1	17	50
		% within Sport	32.0%	28.0%	2.0%	2.0%	2.0%	34.0%	100.0%
		% within Snack Influence	47.1%	48.3%	7.7%	50.0%	20.0%	43.6%	41.0%
		% of Total	13.1%	11.5%	.8%	.8%	.8%	13.9%	41.0%
	Women's Basketball	Count	7	6	1	0	0	0	14
		% within Sport	50.0%	42.9%	7.1%	.0%	.0%	.0%	100.0%
		% within Snack Influence	20.6%	20.7%	7.7%	.0%	.0%	.0%	11.5%
		% of Total	5.7%	4.9%	.8%	.0%	.0%	.0%	11.5%
Total		Count	34	29	13	2	5	39	122
		% within Sport	27.9%	23.8%	10.7%	1.6%	4.1%	32.0%	100.0%
		% within Snack Influence	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	27.9%	23.8%	10.7%	1.6%	4.1%	32.0%	100.0%
Pearson Chi Square: .008									

Table 33: Team halftime hydration recommendations among football, men's basketball and women's basketball players

			Team Recommend Hydration						
			0	Never	Sometimes Never	Sometimes	Sometimes Always	Always	Total
Sport	Football	Count	1	0	0	0	3	54	58
		% within Sport	1.7%	.0%	.0%	.0%	5.2%	93.1%	100.0%
		% within Team Recommend Hydration	100.0%	.0%	.0%	.0%	13.0%	63.5%	47.5%
		% of Total	.8%	.0%	.0%	.0%	2.5%	44.3%	47.5%
	Men's Basketball	Count	0	2	4	4	14	26	50
		% within Sport	.0%	4.0%	8.0%	8.0%	28.0%	52.0%	100.0%
		% within Team Recommend Hydration	.0%	100.0%	100.0%	57.1%	60.9%	30.6%	41.0%
		% of Total	.0%	1.6%	3.3%	3.3%	11.5%	21.3%	41.0%
	Women's Basketball	Count	0	0	0	3	6	5	14
		% within Sport	.0%	.0%	.0%	21.4%	42.9%	35.7%	100.0%
		% within Team Recommend Hydration	.0%	.0%	.0%	42.9%	26.1%	5.9%	11.5%
		% of Total	.0%	.0%	.0%	2.5%	4.9%	4.1%	11.5%
Total		Count	1	2	4	7	23	85	122
		% within Sport	.8%	1.6%	3.3%	5.7%	18.9%	69.7%	100.0%
		% within Team Recommend Hydration	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	.8%	1.6%	3.3%	5.7%	18.9%	69.7%	100.0%
Pearson Chi Square: <.001									

Table 34: Team halftime snacking recommendations among football, men's basketball and women's basketball players

			Team Recommend Snack						
			0	Never	Sometimes Never	Sometimes	Sometimes Always	Always	Total
Sport	Football	Count	1	0	1	13	10	33	58
		% within Sport	1.7%	.0%	1.7%	22.4%	17.2%	56.9%	100.0%
		% within Team Recommend Snack	50.0%	.0%	9.1%	40.6%	55.6%	84.6%	47.5%
		% of Total	.8%	.0%	.8%	10.7%	8.2%	27.0%	47.5%
	Men's Basketball	Count	0	13	9	16	6	6	50
		% within Sport	.0%	26.0%	18.0%	32.0%	12.0%	12.0%	100.0%
		% within Team Recommend Snack	.0%	65.0%	81.8%	50.0%	33.3%	15.4%	41.0%
		% of Total	.0%	10.7%	7.4%	13.1%	4.9%	4.9%	41.0%
	Women's Basketball	Count	1	7	1	3	2	0	14
		% within Sport	7.1%	50.0%	7.1%	21.4%	14.3%	.0%	100.0%
		% within Team Recommend Snack	50.0%	35.0%	9.1%	9.4%	11.1%	.0%	11.5%
		% of Total	.8%	5.7%	.8%	2.5%	1.6%	.0%	11.5%
Total		Count	2	20	11	32	18	39	122
		% within Sport	1.6%	16.4%	9.0%	26.2%	14.8%	32.0%	100.0%
		% within Team Recommend Snack	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	1.6%	16.4%	9.0%	26.2%	14.8%	32.0%	100.0%
Pearson Chi Square: <.001									

Table 35: Beverage availability at halftime among football, men's basketball, and women's basketball players

			Team Bev Avail					
			0	Sometimes Never	Sometimes	Sometimes Always	Always	Total
Sport	Football	Count	1	0	0	1	56	58
		% within Sport	1.7%	.0%	.0%	1.7%	96.6%	100.0%
		% within Team Bev Avail	100.0%	.0%	.0%	14.3%	51.4%	47.5%
		% of Total	.8%	.0%	.0%	.8%	45.9%	47.5%
	Men's Basketball	Count	0	1	3	4	42	50
		% within Sport	.0%	2.0%	6.0%	8.0%	84.0%	100.0%
		% within Team Bev Avail	.0%	100.0%	75.0%	57.1%	38.5%	41.0%
		% of Total	.0%	.8%	2.5%	3.3%	34.4%	41.0%
	Women's Basketball	Count	0	0	1	2	11	14
		% within Sport	.0%	.0%	7.1%	14.3%	78.6%	100.0%
		% within Team Bev Avail	.0%	.0%	25.0%	28.6%	10.1%	11.5%
		% of Total	.0%	.0%	.8%	1.6%	9.0%	11.5%
Total		Count	1	1	4	7	109	122
		% within Sport	.8%	.8%	3.3%	5.7%	89.3%	100.0%
		% within Team Bev Avail	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	.8%	.8%	3.3%	5.7%	89.3%	100.0%
Pearson Chi Square: .216								

Table 36: Beverage preferability of available beverages at halftime among football, men's basketball and women's basketball players

			Beverages Prefer?						
			0	Never	Sometimes Never	Sometimes	Sometimes Always	Always	Total
Sport	Football	Count	1	1	0	6	9	41	58
		% within Sport	1.7%	1.7%	.0%	10.3%	15.5%	70.7%	100.0%
		% within Beverages Prefer?	33.3%	100.0%	.0%	35.3%	36.0%	54.7%	47.5%
		% of Total	.8%	.8%	.0%	4.9%	7.4%	33.6%	47.5%
	Men's Basketball	Count	2	0	1	7	14	26	50
		% within Sport	4.0%	.0%	2.0%	14.0%	28.0%	52.0%	100.0%
		% within Beverages Prefer?	66.7%	.0%	100.0%	41.2%	56.0%	34.7%	41.0%
		% of Total	1.6%	.0%	.8%	5.7%	11.5%	21.3%	41.0%
	Women's Basketball	Count	0	0	0	4	2	8	14
		% within Sport	.0%	.0%	.0%	28.6%	14.3%	57.1%	100.0%
		% within Beverages Prefer?	.0%	.0%	.0%	23.5%	8.0%	10.7%	11.5%
		% of Total	.0%	.0%	.0%	3.3%	1.6%	6.6%	11.5%
Total		Count	3	1	1	17	25	75	122
		% within Sport	2.5%	.8%	.8%	13.9%	20.5%	61.5%	100.0%
		% within Beverages Prefer?	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	2.5%	.8%	.8%	13.9%	20.5%	61.5%	100.0%
Pearson Chi Square: .432									

Table 37: Snack availability at halftime among football, men's basketball, and women's basketball players

			Team Snack Avail						
			0	Never	Sometimes Never	Sometimes	Sometimes Always	Always	Total
Sport	Football	Count	2	0	0	2	5	49	58
		% within Sport	3.4%	.0%	.0%	3.4%	8.6%	84.5%	100.0%
		% within Team Snack Avail	66.7%	.0%	.0%	10.5%	41.7%	69.0%	47.5%
		% of Total	1.6%	.0%	.0%	1.6%	4.1%	40.2%	47.5%
	Men's Basketball	Count	1	5	4	14	6	20	50
		% within Sport	2.0%	10.0%	8.0%	28.0%	12.0%	40.0%	100.0%
		% within Team Snack Avail	33.3%	38.5%	100.0%	73.7%	50.0%	28.2%	41.0%
		% of Total	.8%	4.1%	3.3%	11.5%	4.9%	16.4%	41.0%
	Women's Basketball	Count	0	8	0	3	1	2	14
		% within Sport	.0%	57.1%	.0%	21.4%	7.1%	14.3%	100.0%
		% within Team Snack Avail	.0%	61.5%	.0%	15.8%	8.3%	2.8%	11.5%
		% of Total	.0%	6.6%	.0%	2.5%	.8%	1.6%	11.5%
Total		Count	3	13	4	19	12	71	122
		% within Sport	2.5%	10.7%	3.3%	15.6%	9.8%	58.2%	100.0%
		% within Team Snack Avail	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	2.5%	10.7%	3.3%	15.6%	9.8%	58.2%	100.0%
Pearson Chi Square: <.001									

Table 38: Snack preferability of available snacks at halftime among football, men's basketball and women's basketball players

			Snacks Prefer?						
			0	Never	Sometimes Never	Sometimes	Sometimes Always	Always	Total
Sport	Football	Count	1	0	0	11	18	28	58
		% within Sport	1.7%	.0%	.0%	19.0%	31.0%	48.3%	100.0%
		% within Snacks Prefer?	20.0%	.0%	.0%	33.3%	60.0%	70.0%	47.5%
		% of Total	.8%	.0%	.0%	9.0%	14.8%	23.0%	47.5%
	Men's Basketball	Count	1	6	4	17	11	11	50
		% within Sport	2.0%	12.0%	8.0%	34.0%	22.0%	22.0%	100.0%
		% within Snacks Prefer?	20.0%	60.0%	100.0%	51.5%	36.7%	27.5%	41.0%
		% of Total	.8%	4.9%	3.3%	13.9%	9.0%	9.0%	41.0%
	Women's Basketball	Count	3	4	0	5	1	1	14
		% within Sport	21.4%	28.6%	.0%	35.7%	7.1%	7.1%	100.0%
		% within Snacks Prefer?	60.0%	40.0%	.0%	15.2%	3.3%	2.5%	11.5%
		% of Total	2.5%	3.3%	.0%	4.1%	.8%	.8%	11.5%
Total		Count	5	10	4	33	30	40	122
		% within Sport	4.1%	8.2%	3.3%	27.0%	24.6%	32.8%	100.0%
		% within Snacks Prefer?	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	4.1%	8.2%	3.3%	27.0%	24.6%	32.8%	100.0%
Pearson Chi Square: <.001									

Table 39: Temperature influence on what athletes drink at halftime among football, men's basketball, and women's basketball players

			Temp Influence Drink?						
			0	Never	Sometimes Never	Sometimes	Sometimes Always	Always	Total
Sport	Football	Count	1	0	0	11	11	35	58
		% within Sport	1.7%	.0%	.0%	19.0%	19.0%	60.3%	100.0%
		% within Temp Influence Drink?	100.0%	.0%	.0%	35.5%	36.7%	79.5%	47.5%
		% of Total	.8%	.0%	.0%	9.0%	9.0%	28.7%	47.5%
	Men's Basketball	Count	0	4	8	19	14	5	50
		% within Sport	.0%	8.0%	16.0%	38.0%	28.0%	10.0%	100.0%
		% within Temp Influence Drink?	.0%	80.0%	72.7%	61.3%	46.7%	11.4%	41.0%
		% of Total	.0%	3.3%	6.6%	15.6%	11.5%	4.1%	41.0%
	Women's Basketball	Count	0	1	3	1	5	4	14
		% within Sport	.0%	7.1%	21.4%	7.1%	35.7%	28.6%	100.0%
		% within Temp Influence Drink?	.0%	20.0%	27.3%	3.2%	16.7%	9.1%	11.5%
		% of Total	.0%	.8%	2.5%	.8%	4.1%	3.3%	11.5%
Total		Count	1	5	11	31	30	44	122
		% within Sport	.8%	4.1%	9.0%	25.4%	24.6%	36.1%	100.0%
		% within Temp Influence Drink?	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	.8%	4.1%	9.0%	25.4%	24.6%	36.1%	100.0%
Pearson Chi Square: <.001									

Table 40: Temperature influence on what athletes eat at halftime among football, men's basketball, and women's basketball players

			Temp Influence Eat?						
			0	Never	Sometimes Never	Sometimes	Sometimes Always	Always	Total
Sport	Football	Count	1	6	10	17	11	13	58
		% within Sport	1.7%	10.3%	17.2%	29.3%	19.0%	22.4%	100.0%
		% within Temp Influence Eat?	33.3%	27.3%	41.7%	44.7%	68.8%	68.4%	47.5%
		% of Total	.8%	4.9%	8.2%	13.9%	9.0%	10.7%	47.5%
	Men's Basketball	Count	1	11	12	17	4	5	50
		% within Sport	2.0%	22.0%	24.0%	34.0%	8.0%	10.0%	100.0%
		% within Temp Influence Eat?	33.3%	50.0%	50.0%	44.7%	25.0%	26.3%	41.0%
		% of Total	.8%	9.0%	9.8%	13.9%	3.3%	4.1%	41.0%
	Women's Basketball	Count	1	5	2	4	1	1	14
		% within Sport	7.1%	35.7%	14.3%	28.6%	7.1%	7.1%	100.0%
		% within Temp Influence Eat?	33.3%	22.7%	8.3%	10.5%	6.3%	5.3%	11.5%
		% of Total	.8%	4.1%	1.6%	3.3%	.8%	.8%	11.5%
Total		Count	3	22	24	38	16	19	122
		% within Sport	2.5%	18.0%	19.7%	31.1%	13.1%	15.6%	100.0%
		% within Temp Influence Eat?	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	2.5%	18.0%	19.7%	31.1%	13.1%	15.6%	100.0%
Pearson Chi Square: .195									

Table 41: Humidity influence on what athletes drink at halftime among football, men's basketball, and women's basketball players

			Humid Influence Drink?						
			0	Never	Sometimes Never	Sometimes	Sometimes Always	Always	Total
Sport	Football	Count	1	0	1	8	11	37	58
		% within Sport	1.7%	.0%	1.7%	13.8%	19.0%	63.8%	100.0%
		% within Humid Influence Drink?	100.0%	.0%	20.0%	27.6%	36.7%	77.1%	47.5%
		% of Total	.8%	.0%	.8%	6.6%	9.0%	30.3%	47.5%
	Men's Basketball	Count	0	8	4	18	13	7	50
		% within Sport	.0%	16.0%	8.0%	36.0%	26.0%	14.0%	100.0%
		% within Humid Influence Drink?	.0%	88.9%	80.0%	62.1%	43.3%	14.6%	41.0%
		% of Total	.0%	6.6%	3.3%	14.8%	10.7%	5.7%	41.0%
	Women's Basketball	Count	0	1	0	3	6	4	14
		% within Sport	.0%	7.1%	.0%	21.4%	42.9%	28.6%	100.0%
		% within Humid Influence Drink?	.0%	11.1%	.0%	10.3%	20.0%	8.3%	11.5%
		% of Total	.0%	.8%	.0%	2.5%	4.9%	3.3%	11.5%
Total		Count	1	9	5	29	30	48	122
		% within Sport	.8%	7.4%	4.1%	23.8%	24.6%	39.3%	100.0%
		% within Humid Influence Drink?	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	.8%	7.4%	4.1%	23.8%	24.6%	39.3%	100.0%
Pearson Chi Square: <.001									

Table 42: Humidity influence on what athletes eat at halftime among football, men's basketball, and women's basketball players

			Humid Influence Eat?						
			0	Never	Sometimes Never	Sometimes	Sometimes Always	Always	Total
Sport	Football	Count	1	6	10	18	9	14	58
		% within Sport	1.7%	10.3%	17.2%	31.0%	15.5%	24.1%	100.0%
		% within Humid Influence Eat?	33.3%	27.3%	40.0%	46.2%	56.3%	82.4%	47.5%
		% of Total	.8%	4.9%	8.2%	14.8%	7.4%	11.5%	47.5%
	Men's Basketball	Count	1	12	12	16	7	2	50
		% within Sport	2.0%	24.0%	24.0%	32.0%	14.0%	4.0%	100.0%
		% within Humid Influence Eat?	33.3%	54.5%	48.0%	41.0%	43.8%	11.8%	41.0%
		% of Total	.8%	9.8%	9.8%	13.1%	5.7%	1.6%	41.0%
	Women's Basketball	Count	1	4	3	5	0	1	14
		% within Sport	7.1%	28.6%	21.4%	35.7%	.0%	7.1%	100.0%
		% within Humid Influence Eat?	33.3%	18.2%	12.0%	12.8%	.0%	5.9%	11.5%
		% of Total	.8%	3.3%	2.5%	4.1%	.0%	.8%	11.5%
Total		Count	3	22	25	39	16	17	122
		% within Sport	2.5%	18.0%	20.5%	32.0%	13.1%	13.9%	100.0%
		% within Humid Influence Eat?	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	2.5%	18.0%	20.5%	32.0%	13.1%	13.9%	100.0%
Pearson Chi Square: .091									

Table 43: Altitude influence on what athletes drink at halftime among football, men's basketball, and women's basketball players

			Altitude Influence Drink?						
			0	Never	Sometimes Never	Sometimes	Sometimes Always	Always	Total
Sport	Football	Count	2	13	10	10	17	6	58
		% within Sport	3.4%	22.4%	17.2%	17.2%	29.3%	10.3%	100.0%
		% within Altitude Influence Drink?	100.0%	44.8%	50.0%	43.5%	47.2%	50.0%	47.5%
		% of Total	1.6%	10.7%	8.2%	8.2%	13.9%	4.9%	47.5%
	Men's Basketball	Count	0	13	7	11	16	3	50
		% within Sport	.0%	26.0%	14.0%	22.0%	32.0%	6.0%	100.0%
		% within Altitude Influence Drink?	.0%	44.8%	35.0%	47.8%	44.4%	25.0%	41.0%
		% of Total	.0%	10.7%	5.7%	9.0%	13.1%	2.5%	41.0%
	Women's Basketball	Count	0	3	3	2	3	3	14
		% within Sport	.0%	21.4%	21.4%	14.3%	21.4%	21.4%	100.0%
		% within Altitude Influence Drink?	.0%	10.3%	15.0%	8.7%	8.3%	25.0%	11.5%
		% of Total	.0%	2.5%	2.5%	1.6%	2.5%	2.5%	11.5%
Total		Count	2	29	20	23	36	12	122
		% within Sport	1.6%	23.8%	16.4%	18.9%	29.5%	9.8%	100.0%
		% within Altitude Influence Drink?	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	1.6%	23.8%	16.4%	18.9%	29.5%	9.8%	100.0%
Pearson Chi Square: .781									

Table 44: Altitude influence on what athletes eat at halftime among football, men's basketball, and women's basketball players

			Altitude Influence Eat?						
			0	Never	Sometimes Never	Sometimes	Sometimes Always	Always	Total
Sport	Football	Count	2	15	13	14	8	6	58
		% within Sport	3.4%	25.9%	22.4%	24.1%	13.8%	10.3%	100.0%
		% within Altitude Influence Eat?	66.7%	39.5%	48.1%	46.7%	50.0%	75.0%	47.5%
		% of Total	1.6%	12.3%	10.7%	11.5%	6.6%	4.9%	47.5%
	Men's Basketball	Count	0	18	10	14	7	1	50
		% within Sport	.0%	36.0%	20.0%	28.0%	14.0%	2.0%	100.0%
		% within Altitude Influence Eat?	.0%	47.4%	37.0%	46.7%	43.8%	12.5%	41.0%
		% of Total	.0%	14.8%	8.2%	11.5%	5.7%	.8%	41.0%
	Women's Basketball	Count	1	5	4	2	1	1	14
		% within Sport	7.1%	35.7%	28.6%	14.3%	7.1%	7.1%	100.0%
		% within Altitude Influence Eat?	33.3%	13.2%	14.8%	6.7%	6.3%	12.5%	11.5%
		% of Total	.8%	4.1%	3.3%	1.6%	.8%	.8%	11.5%
Total		Count	3	38	27	30	16	8	122
		% within Sport	2.5%	31.1%	22.1%	24.6%	13.1%	6.6%	100.0%
		% within Altitude Influence Eat?	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	2.5%	31.1%	22.1%	24.6%	13.1%	6.6%	100.0%
Pearson Chi Square: .609									

Table 45: Frequency that athletes are prone to cramping among football, men's basketball, and women's basketball players

			Prone to Cramping?						
			0	Never	Sometimes Never	Sometimes	Sometimes Always	Always	Total
Sport	Football	Count	1	9	28	11	2	7	58
		% within Sport	1.7%	15.5%	48.3%	19.0%	3.4%	12.1%	100.0%
		% within Prone to Cramping?	100.0%	37.5%	58.3%	39.3%	22.2%	58.3%	47.5%
		% of Total	.8%	7.4%	23.0%	9.0%	1.6%	5.7%	47.5%
	Men's Basketball	Count	0	12	16	13	5	4	50
		% within Sport	.0%	24.0%	32.0%	26.0%	10.0%	8.0%	100.0%
		% within Prone to Cramping?	.0%	50.0%	33.3%	46.4%	55.6%	33.3%	41.0%
		% of Total	.0%	9.8%	13.1%	10.7%	4.1%	3.3%	41.0%
	Women's Basketball	Count	0	3	4	4	2	1	14
		% within Sport	.0%	21.4%	28.6%	28.6%	14.3%	7.1%	100.0%
		% within Prone to Cramping?	.0%	12.5%	8.3%	14.3%	22.2%	8.3%	11.5%
		% of Total	.0%	2.5%	3.3%	3.3%	1.6%	.8%	11.5%
Total		Count	1	24	48	28	9	12	122
		% within Sport	.8%	19.7%	39.3%	23.0%	7.4%	9.8%	100.0%
		% within Prone to Cramping?	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	.8%	19.7%	39.3%	23.0%	7.4%	9.8%	100.0%
Pearson Chi Square: .596									

Table 46: Influence of cramping on what athletes drink at halftime among football, men's basketball, women's basketball players

			Cramps Affect Drink						
			0	Never	Sometimes Never	Sometimes	Sometimes Always	Always	Total
Sport	Football	Count	1	5	6	11	9	26	58
		% within Sport	1.7%	8.6%	10.3%	19.0%	15.5%	44.8%	100.0%
		% within Cramps Affect Drink	50.0%	31.3%	42.9%	47.8%	37.5%	60.5%	47.5%
		% of Total	.8%	4.1%	4.9%	9.0%	7.4%	21.3%	47.5%
	Men's Basketball	Count	0	9	5	9	12	15	50
		% within Sport	.0%	18.0%	10.0%	18.0%	24.0%	30.0%	100.0%
		% within Cramps Affect Drink	.0%	56.3%	35.7%	39.1%	50.0%	34.9%	41.0%
		% of Total	.0%	7.4%	4.1%	7.4%	9.8%	12.3%	41.0%
	Women's Basketball	Count	1	2	3	3	3	2	14
		% within Sport	7.1%	14.3%	21.4%	21.4%	21.4%	14.3%	100.0%
		% within Cramps Affect Drink	50.0%	12.5%	21.4%	13.0%	12.5%	4.7%	11.5%
		% of Total	.8%	1.6%	2.5%	2.5%	2.5%	1.6%	11.5%
Total		Count	2	16	14	23	24	43	122
		% within Sport	1.6%	13.1%	11.5%	18.9%	19.7%	35.2%	100.0%
		% within Cramps Affect Drink	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	1.6%	13.1%	11.5%	18.9%	19.7%	35.2%	100.0%
Pearson Chi Square: .333									

Table 47: Influence of cramping on what athletes eat at halftime among football, men's basketball, women's basketball players

			Cramps Affect Eat						
			0	Never	Sometimes Never	Sometimes	Sometimes Always	Always	Total
Sport	Football	Count	1	12	13	11	10	11	58
		% within Sport	1.7%	20.7%	22.4%	19.0%	17.2%	19.0%	100.0%
		% within Cramps Affect Eat	25.0%	37.5%	59.1%	44.0%	45.5%	64.7%	47.5%
		% of Total	.8%	9.8%	10.7%	9.0%	8.2%	9.0%	47.5%
	Men's Basketball	Count	1	15	7	10	11	6	50
		% within Sport	2.0%	30.0%	14.0%	20.0%	22.0%	12.0%	100.0%
		% within Cramps Affect Eat	25.0%	46.9%	31.8%	40.0%	50.0%	35.3%	41.0%
		% of Total	.8%	12.3%	5.7%	8.2%	9.0%	4.9%	41.0%
	Women's Basketball	Count	2	5	2	4	1	0	14
		% within Sport	14.3%	35.7%	14.3%	28.6%	7.1%	.0%	100.0%
		% within Cramps Affect Eat	50.0%	15.6%	9.1%	16.0%	4.5%	.0%	11.5%
		% of Total	1.6%	4.1%	1.6%	3.3%	.8%	.0%	11.5%
Total		Count	4	32	22	25	22	17	122
		% within Sport	3.3%	26.2%	18.0%	20.5%	18.0%	13.9%	100.0%
		% within Cramps Affect Eat	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	3.3%	26.2%	18.0%	20.5%	18.0%	13.9%	100.0%
Pearson Chi Square: .198									

Table 48: Frequency that athletes are prone to injuries among football, men's basketball, and women's basketball players

			Prone to Injury						
			0	Never	Sometimes Never	Sometimes	Sometimes Always	Always	Total
Sport	Football	Count	1	10	25	16	4	2	58
		% within Sport	1.7%	17.2%	43.1%	27.6%	6.9%	3.4%	100.0%
		% within Prone to Injury	50.0%	66.7%	44.6%	42.1%	57.1%	50.0%	47.5%
		% of Total	.8%	8.2%	20.5%	13.1%	3.3%	1.6%	47.5%
	Men's Basketball	Count	0	5	28	15	1	1	50
		% within Sport	.0%	10.0%	56.0%	30.0%	2.0%	2.0%	100.0%
		% within Prone to Injury	.0%	33.3%	50.0%	39.5%	14.3%	25.0%	41.0%
		% of Total	.0%	4.1%	23.0%	12.3%	.8%	.8%	41.0%
	Women's Basketball	Count	1	0	3	7	2	1	14
		% within Sport	7.1%	.0%	21.4%	50.0%	14.3%	7.1%	100.0%
		% within Prone to Injury	50.0%	.0%	5.4%	18.4%	28.6%	25.0%	11.5%
		% of Total	.8%	.0%	2.5%	5.7%	1.6%	.8%	11.5%
Total		Count	2	15	56	38	7	4	122
		% within Sport	1.6%	12.3%	45.9%	31.1%	5.7%	3.3%	100.0%
		% within Prone to Injury	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	1.6%	12.3%	45.9%	31.1%	5.7%	3.3%	100.0%
Pearson Chi Square: .118									

Table 49: Influence of injuries on what athletes drink at halftime among football, men's basketball, women's basketball players

			Injury Affect Drink						
			0	Never	Sometimes Never	Sometimes	Sometimes Always	Always	Total
Sport	Football	Count	1	20	15	14	4	4	58
		% within Sport	1.7%	34.5%	25.9%	24.1%	6.9%	6.9%	100.0%
		% within Injury Affect Drink	33.3%	44.4%	44.1%	56.0%	50.0%	57.1%	47.5%
		% of Total	.8%	16.4%	12.3%	11.5%	3.3%	3.3%	47.5%
	Men's Basketball	Count	0	20	14	10	3	3	50
		% within Sport	.0%	40.0%	28.0%	20.0%	6.0%	6.0%	100.0%
		% within Injury Affect Drink	.0%	44.4%	41.2%	40.0%	37.5%	42.9%	41.0%
		% of Total	.0%	16.4%	11.5%	8.2%	2.5%	2.5%	41.0%
	Women's Basketball	Count	2	5	5	1	1	0	14
		% within Sport	14.3%	35.7%	35.7%	7.1%	7.1%	.0%	100.0%
		% within Injury Affect Drink	66.7%	11.1%	14.7%	4.0%	12.5%	.0%	11.5%
		% of Total	1.6%	4.1%	4.1%	.8%	.8%	.0%	11.5%
Total		Count	3	45	34	25	8	7	122
		% within Sport	2.5%	36.9%	27.9%	20.5%	6.6%	5.7%	100.0%
		% within Injury Affect Drink	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	2.5%	36.9%	27.9%	20.5%	6.6%	5.7%	100.0%
Pearson Chi Square: .251									

Table 50: Influence of injuries on what athletes eat at halftime among football, men's basketball, women's basketball players

			Injury Affect Eat						
			0	Never	Sometimes Never	Sometimes	Sometimes Always	Always	Total
Sport	Football	Count	1	21	18	11	5	2	58
		% within Sport	1.7%	36.2%	31.0%	19.0%	8.6%	3.4%	100.0%
		% within Injury Affect Eat	25.0%	42.9%	50.0%	55.0%	55.6%	50.0%	47.5%
		% of Total	.8%	17.2%	14.8%	9.0%	4.1%	1.6%	47.5%
	Men's Basketball	Count	1	22	14	7	4	2	50
		% within Sport	2.0%	44.0%	28.0%	14.0%	8.0%	4.0%	100.0%
		% within Injury Affect Eat	25.0%	44.9%	38.9%	35.0%	44.4%	50.0%	41.0%
		% of Total	.8%	18.0%	11.5%	5.7%	3.3%	1.6%	41.0%
	Women's Basketball	Count	2	6	4	2	0	0	14
		% within Sport	14.3%	42.9%	28.6%	14.3%	.0%	.0%	100.0%
		% within Injury Affect Eat	50.0%	12.2%	11.1%	10.0%	.0%	.0%	11.5%
		% of Total	1.6%	4.9%	3.3%	1.6%	.0%	.0%	11.5%
Total		Count	4	49	36	20	9	4	122
		% within Sport	3.3%	40.2%	29.5%	16.4%	7.4%	3.3%	100.0%
		% within Injury Affect Eat	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	3.3%	40.2%	29.5%	16.4%	7.4%	3.3%	100.0%
Pearson Chi Square: .576									

Table 51: Timing of pre-game meal consumption among football, men's basketball, and women's basketball players

			Pre-Game Meal (hrs before)				
			0	1-2 hrs	2.5-4.0 hrs	4.5-6.0 hrs	Total
Sport	Football	Count	2	5	35	16	58
		% within Sport	3.4%	8.6%	60.3%	27.6%	100.0%
		% within Pre-Game Meal (hrs before)	40.0%	50.0%	43.2%	61.5%	47.5%
		% of Total	1.6%	4.1%	28.7%	13.1%	47.5%
	Men's Basketball	Count	2	5	35	8	50
		% within Sport	4.0%	10.0%	70.0%	16.0%	100.0%
		% within Pre-Game Meal (hrs before)	40.0%	50.0%	43.2%	30.8%	41.0%
		% of Total	1.6%	4.1%	28.7%	6.6%	41.0%
	Women's Basketball	Count	1	0	11	2	14
		% within Sport	7.1%	.0%	78.6%	14.3%	100.0%
		% within Pre-Game Meal (hrs before)	20.0%	.0%	13.6%	7.7%	11.5%
		% of Total	.8%	.0%	9.0%	1.6%	11.5%
Total		Count	5	10	81	26	122
		% within Sport	4.1%	8.2%	66.4%	21.3%	100.0%
		% within Pre-Game Meal (hrs before)	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	4.1%	8.2%	66.4%	21.3%	100.0%
Pearson Chi Square: .606							

Table 52: Consumption of fluids between the pre-game warm up and kick off/tipoff among football, men's basketball, and women's basketball players

			Fluid Before Game						
			0	Never	Sometimes Never	Sometimes	Sometimes Always	Always	Total
Sport	Football	Count	2	0	3	5	13	35	58
		% within Sport	3.4%	.0%	5.2%	8.6%	22.4%	60.3%	100.0%
		% within Fluid Before Game	100.0%	.0%	27.3%	31.3%	56.5%	52.2%	47.5%
		% of Total	1.6%	.0%	2.5%	4.1%	10.7%	28.7%	47.5%
	Men's Basketball	Count	0	2	6	7	10	25	50
		% within Sport	.0%	4.0%	12.0%	14.0%	20.0%	50.0%	100.0%
		% within Fluid Before Game	.0%	66.7%	54.5%	43.8%	43.5%	37.3%	41.0%
		% of Total	.0%	1.6%	4.9%	5.7%	8.2%	20.5%	41.0%
	Women's Basketball	Count	0	1	2	4	0	7	14
		% within Sport	.0%	7.1%	14.3%	28.6%	.0%	50.0%	100.0%
		% within Fluid Before Game	.0%	33.3%	18.2%	25.0%	.0%	10.4%	11.5%
		% of Total	.0%	.8%	1.6%	3.3%	.0%	5.7%	11.5%
Total		Count	2	3	11	16	23	67	122
		% within Sport	1.6%	2.5%	9.0%	13.1%	18.9%	54.9%	100.0%
		% within Fluid Before Game	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	1.6%	2.5%	9.0%	13.1%	18.9%	54.9%	100.0%
Pearson Chi Square: .157									

Table 53: Consumption of fluids during the first half of the game among football, men's basketball, and women's basketball players

			Fluids 1st Half					
			0	Sometimes Never	Sometimes	Sometimes Always	Always	Total
Sport	Football	Count	1	2	3	18	34	58
		% within Sport	1.7%	3.4%	5.2%	31.0%	58.6%	100.0%
		% within Fluids 1st Half	100.0%	25.0%	17.6%	60.0%	51.5%	47.5%
		% of Total	.8%	1.6%	2.5%	14.8%	27.9%	47.5%
	Men's Basketball	Count	0	5	9	11	25	50
		% within Sport	.0%	10.0%	18.0%	22.0%	50.0%	100.0%
		% within Fluids 1st Half	.0%	62.5%	52.9%	36.7%	37.9%	41.0%
		% of Total	.0%	4.1%	7.4%	9.0%	20.5%	41.0%
	Women's Basketball	Count	0	1	5	1	7	14
		% within Sport	.0%	7.1%	35.7%	7.1%	50.0%	100.0%
		% within Fluids 1st Half	.0%	12.5%	29.4%	3.3%	10.6%	11.5%
		% of Total	.0%	.8%	4.1%	.8%	5.7%	11.5%
Total		Count	1	8	17	30	66	122
		% within Sport	.8%	6.6%	13.9%	24.6%	54.1%	100.0%
		% within Fluids 1st Half	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	.8%	6.6%	13.9%	24.6%	54.1%	100.0%
Pearson Chi Square: .065								

Table 54: Influence of pre-game drinking practices on halftime hydration among football, men's basketball, women's basketball players

			Pregame influence Halftime						
			0	Never	Sometimes Never	Sometimes	Sometimes Always	Always	Total
Sport	Football	Count	1	7	3	17	14	16	58
		% within Sport	1.7%	12.1%	5.2%	29.3%	24.1%	27.6%	100.0%
		% within Pregame influence Halftime	25.0%	53.8%	25.0%	42.5%	60.9%	53.3%	47.5%
		% of Total	.8%	5.7%	2.5%	13.9%	11.5%	13.1%	47.5%
	Men's Basketball	Count	1	6	5	17	8	13	50
		% within Sport	2.0%	12.0%	10.0%	34.0%	16.0%	26.0%	100.0%
		% within Pregame influence Halftime	25.0%	46.2%	41.7%	42.5%	34.8%	43.3%	41.0%
		% of Total	.8%	4.9%	4.1%	13.9%	6.6%	10.7%	41.0%
	Women's Basketball	Count	2	0	4	6	1	1	14
		% within Sport	14.3%	.0%	28.6%	42.9%	7.1%	7.1%	100.0%
		% within Pregame influence Halftime	50.0%	.0%	33.3%	15.0%	4.3%	3.3%	11.5%
		% of Total	1.6%	.0%	3.3%	4.9%	.8%	.8%	11.5%
Total		Count	4	13	12	40	23	30	122
		% within Sport	3.3%	10.7%	9.8%	32.8%	18.9%	24.6%	100.0%
		% within Pregame influence Halftime	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	3.3%	10.7%	9.8%	32.8%	18.9%	24.6%	100.0%
Pearson Chi Square: .046									

Table 55: Influence of first half drinking practices on halftime hydration among football, men's basketball, women's basketball players

			Firsthalf influence Halftime						
			0	Never	Sometimes Never	Sometimes	Sometimes Always	Always	Total
Sport	Football	Count	3	4	3	19	14	15	58
		% within Sport	5.2%	6.9%	5.2%	32.8%	24.1%	25.9%	100.0%
		% within Firsthalf influence Halftime	50.0%	50.0%	27.3%	47.5%	56.0%	46.9%	47.5%
		% of Total	2.5%	3.3%	2.5%	15.6%	11.5%	12.3%	47.5%
	Men's Basketball	Count	0	4	5	15	10	16	50
		% within Sport	.0%	8.0%	10.0%	30.0%	20.0%	32.0%	100.0%
		% within Firsthalf influence Halftime	.0%	50.0%	45.5%	37.5%	40.0%	50.0%	41.0%
		% of Total	.0%	3.3%	4.1%	12.3%	8.2%	13.1%	41.0%
	Women's Basketball	Count	3	0	3	6	1	1	14
		% within Sport	21.4%	.0%	21.4%	42.9%	7.1%	7.1%	100.0%
		% within Firsthalf influence Halftime	50.0%	.0%	27.3%	15.0%	4.0%	3.1%	11.5%
		% of Total	2.5%	.0%	2.5%	4.9%	.8%	.8%	11.5%
Total		Count	6	8	11	40	25	32	122
		% within Sport	4.9%	6.6%	9.0%	32.8%	20.5%	26.2%	100.0%
		% within Firsthalf influence Halftime	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	4.9%	6.6%	9.0%	32.8%	20.5%	26.2%	100.0%
Pearson Chi Square: .035									

Table 56: Consumption of food between the pre-game warm up and kick off/tipoff among football, men's basketball, and women's basketball players

			Food before game						
			0	Never	Sometimes Never	Sometimes	Sometimes Always	Always	Total
Sport	Football	Count	1	25	11	10	8	3	58
		% within Sport	1.7%	43.1%	19.0%	17.2%	13.8%	5.2%	100.0%
		% within Food before game	100.0%	55.6%	39.3%	40.0%	57.1%	33.3%	47.5%
		% of Total	.8%	20.5%	9.0%	8.2%	6.6%	2.5%	47.5%
	Men's Basketball	Count	0	15	13	12	6	4	50
		% within Sport	.0%	30.0%	26.0%	24.0%	12.0%	8.0%	100.0%
		% within Food before game	.0%	33.3%	46.4%	48.0%	42.9%	44.4%	41.0%
		% of Total	.0%	12.3%	10.7%	9.8%	4.9%	3.3%	41.0%
	Women's Basketball	Count	0	5	4	3	0	2	14
		% within Sport	.0%	35.7%	28.6%	21.4%	.0%	14.3%	100.0%
		% within Food before game	.0%	11.1%	14.3%	12.0%	.0%	22.2%	11.5%
		% of Total	.0%	4.1%	3.3%	2.5%	.0%	1.6%	11.5%
Total		Count	1	45	28	25	14	9	122
		% within Sport	.8%	36.9%	23.0%	20.5%	11.5%	7.4%	100.0%
		% within Food before game	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	.8%	36.9%	23.0%	20.5%	11.5%	7.4%	100.0%
Pearson Chi Square: .729									

Table 57: Consumption of food during the first half of the game among football, men's basketball, and women's basketball players

			Food 1st Half						
			0	Never	Sometimes Never	Sometimes	Sometimes Always	Always	Total
Sport	Football	Count	1	32	7	9	7	2	58
		% within Sport	1.7%	55.2%	12.1%	15.5%	12.1%	3.4%	100.0%
		% within Food 1st Half	100.0%	43.8%	35.0%	50.0%	100.0%	66.7%	47.5%
		% of Total	.8%	26.2%	5.7%	7.4%	5.7%	1.6%	47.5%
	Men's Basketball	Count	0	30	12	7	0	1	50
		% within Sport	.0%	60.0%	24.0%	14.0%	.0%	2.0%	100.0%
		% within Food 1st Half	.0%	41.1%	60.0%	38.9%	.0%	33.3%	41.0%
		% of Total	.0%	24.6%	9.8%	5.7%	.0%	.8%	41.0%
	Women's Basketball	Count	0	11	1	2	0	0	14
		% within Sport	.0%	78.6%	7.1%	14.3%	.0%	.0%	100.0%
		% within Food 1st Half	.0%	15.1%	5.0%	11.1%	.0%	.0%	11.5%
		% of Total	.0%	9.0%	.8%	1.6%	.0%	.0%	11.5%
Total		Count	1	73	20	18	7	3	122
		% within Sport	.8%	59.8%	16.4%	14.8%	5.7%	2.5%	100.0%
		% within Food 1st Half	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	.8%	59.8%	16.4%	14.8%	5.7%	2.5%	100.0%
Pearson Chi Square: .188									

Table 58: Influence of pre-game eating practices on halftime snacking among football, men's basketball, women's basketball players

			Pregame Influence Halftime						
			0	Never	Sometimes Never	Sometimes	Sometimes Always	Always	Total
Sport	Football	Count	1	19	7	17	4	10	58
		% within Sport	1.7%	32.8%	12.1%	29.3%	6.9%	17.2%	100.0%
		% within Pregame Influence Halftime	100.0%	44.2%	33.3%	50.0%	44.4%	71.4%	47.5%
		% of Total	.8%	15.6%	5.7%	13.9%	3.3%	8.2%	47.5%
	Men's Basketball	Count	0	17	12	13	4	4	50
		% within Sport	.0%	34.0%	24.0%	26.0%	8.0%	8.0%	100.0%
		% within Pregame Influence Halftime	.0%	39.5%	57.1%	38.2%	44.4%	28.6%	41.0%
		% of Total	.0%	13.9%	9.8%	10.7%	3.3%	3.3%	41.0%
	Women's Basketball	Count	0	7	2	4	1	0	14
		% within Sport	.0%	50.0%	14.3%	28.6%	7.1%	.0%	100.0%
		% within Pregame Influence Halftime	.0%	16.3%	9.5%	11.8%	11.1%	.0%	11.5%
		% of Total	.0%	5.7%	1.6%	3.3%	.8%	.0%	11.5%
Total		Count	1	43	21	34	9	14	122
		% within Sport	.8%	35.2%	17.2%	27.9%	7.4%	11.5%	100.0%
		% within Pregame Influence Halftime	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	.8%	35.2%	17.2%	27.9%	7.4%	11.5%	100.0%
Pearson Chi Square: .594									

Table 59: Influence of first half eating practices on halftime eating habits among football, men's basketball, women's basketball players

			Firsthalf influence Halftime						
			0	Never	Sometimes Never	Sometimes	Sometimes Always	Always	Total
Sport	Football	Count	2	24	8	16	3	5	58
		% within Sport	3.4%	41.4%	13.8%	27.6%	5.2%	8.6%	100.0%
		% within Firsthalf influence Halftime	66.7%	42.9%	34.8%	57.1%	60.0%	71.4%	47.5%
		% of Total	1.6%	19.7%	6.6%	13.1%	2.5%	4.1%	47.5%
	Men's Basketball	Count	0	26	13	7	2	2	50
		% within Sport	.0%	52.0%	26.0%	14.0%	4.0%	4.0%	100.0%
		% within Firsthalf influence Halftime	.0%	46.4%	56.5%	25.0%	40.0%	28.6%	41.0%
		% of Total	.0%	21.3%	10.7%	5.7%	1.6%	1.6%	41.0%
	Women's Basketball	Count	1	6	2	5	0	0	14
		% within Sport	7.1%	42.9%	14.3%	35.7%	.0%	.0%	100.0%
		% within Firsthalf influence Halftime	33.3%	10.7%	8.7%	17.9%	.0%	.0%	11.5%
		% of Total	.8%	4.9%	1.6%	4.1%	.0%	.0%	11.5%
Total		Count	3	56	23	28	5	7	122
		% within Sport	2.5%	45.9%	18.9%	23.0%	4.1%	5.7%	100.0%
		% within Firsthalf influence Halftime	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	2.5%	45.9%	18.9%	23.0%	4.1%	5.7%	100.0%
Pearson Chi Square: .311									

Table 60: Extent of in-game weight loss among football, men's basketball, and women's basketball players									
			Lose Weight During Game						
			0	Never	Sometimes Never	Sometimes	Sometimes Always	Always	Total
Sport	Football	Count	2	3	6	15	16	16	58
		% within Sport	3.4%	5.2%	10.3%	25.9%	27.6%	27.6%	100.0%
		% within Lose Weight During Game	66.7%	23.1%	27.3%	38.5%	64.0%	80.0%	47.5%
		% of Total	1.6%	2.5%	4.9%	12.3%	13.1%	13.1%	47.5%
	Men's Basketball	Count	0	6	10	21	9	4	50
		% within Sport	.0%	12.0%	20.0%	42.0%	18.0%	8.0%	100.0%
		% within Lose Weight During Game	.0%	46.2%	45.5%	53.8%	36.0%	20.0%	41.0%
		% of Total	.0%	4.9%	8.2%	17.2%	7.4%	3.3%	41.0%
	Women's Basketball	Count	1	4	6	3	0	0	14
		% within Sport	7.1%	28.6%	42.9%	21.4%	.0%	.0%	100.0%
		% within Lose Weight During Game	33.3%	30.8%	27.3%	7.7%	.0%	.0%	11.5%
		% of Total	.8%	3.3%	4.9%	2.5%	.0%	.0%	11.5%
Total		Count	3	13	22	39	25	20	122
		% within Sport	2.5%	10.7%	18.0%	32.0%	20.5%	16.4%	100.0%
		% within Lose Weight During Game	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	2.5%	10.7%	18.0%	32.0%	20.5%	16.4%	100.0%
Pearson Chi Square: <.001									

APPENDIX A

1. **Age:** _____ 2. **Gender:** (A)Male (B)Female

3. **Race:**
___(A)American Indian and Alaska Native
___(B)Asian
___(C)Biracial: please specify_____
___(D)Black or African American
___(E)Hispanic
___(F)Native Hawaiian and Other Pacific Islander
___(G)White
___(H)Other: please specify_____

4. **Height:** _____ft _____in 5. **Current Weight:** _____lb

6. What sport do you play? (A)Football (B)Men's Basketball (C)Women's Basketball

7. Do you play indoors, outdoors or both? (A)Indoors (B)Outdoors (C)Both

8. Please select *primary position* that you play:

Football
___ (A)Kicker/Punter
___ (B)Offensive line/Defensive line
___ (C)Tight end/Inside linebacker
___ (D)Running back/Outside linebacker
___ (E)Wide receiver/Defensive back

Basketball
___(A)Point guard
___(B)Shooting guard
___(C)Small forward
___(D)Power forward
___(E)Center

9. **YEARS** played in **COLLEGE**:	1	2	3	4
10. **YEARS REDSHIRTED** in college:	0	1	2	3
11. **YEARS** played at **PROFESSIONAL** level:	1-3	4-8	9-12	13-15
12. **MINUTES AVAILABLE** for you **to consume** a **beverage** or **snack** during **halftime:**	0-5	6-10	11-15	16-20

13-23. What type of **beverage(s)** do you consume at **halftime**? Please check all that apply and amounts.

[Check Closest Beverage(s) and Circle Closest Amounts]		**Amounts**			
√	**Beverage**	**A**	**B**	**C**	**D**
	13. Excess	½ cup	1-2 cups	3-4 cups	5 cups or more
	14. FRS	½ cup	1-2 cups	3-4 cups	5 cups or more
	15. Fruit Juice	½ cup	1-2 cups	3-4 cups	5 cups or more
	16. Gatorade	½ cup	1-2 cups	3-4 cups	5 cups or more
	17. Gatorload	½ cup	1-2 cups	3-4 cups	5 cups or more
	18. Hydrate	½ cup	1-2 cups	3-4 cups	5 cups or more
	19. Powerade	½ cup	1-2 cups	3-4 cups	5 cups or more
	20. Powerade Zero	½ cup	1-2 cups	3-4 cups	5 cups or more
	21. Vitamin Water	½ cup	1-2 cups	3-4 cups	5 cups or more
	22. Water	½ cup	1-2 cups	3-4 cups	5 cups or more
	23. Other (please list):	½ cup	1-2 cups	3-4 cups	5 cups or more

24-31. What type of **snack(s)** do you consume at **halftime**? Please check all that apply and list amount consumed.

[Check Closest Snack(s) and Circle Closest	**Amounts**

	Amounts]				
√	Snack	A	B	C	D
	24. Canned Fruit (i.e. apple sce, can oranges, etc)	½ Can	1 Can	1 ½ Cans	2 Cans or more
	25. Crackers, pretzels, saltines	½ Cup	1 Cup	1 ½ Cups	2 Cups or more
	26. Energy bar(i.e. GranolaBar, PowerBar, etc.)	½ Bar	1 Bar	1 ½ Bars	2 Bars or more
	27. Energy gel	½ Pack	1 Pack	1 ½ Packs	2 Packs or more
	28. Fresh fruit(i.e. apple, banana, orange)	½ Fruit	1 Fruit	1 ½ Fruit	2 Fruits or more
	29. Peanut butter	½ Tbsp	1 Tbsp	1 ½ Tbsp	2 Tbsp or more
	30. Salt free pretzels	½ Cup	1 Cup	1 ½ Cups	2 Cups or more
	31. Other (please list):	½	1	1 ½	2 or more

32. Are **beverages** that you consume during halftime:
___(A)Purchased and brought to the game by you?
___(B)Provided by the team?

Question (Please circle most common value)	Never		Some times		Always
33. To what extent do you **hydrate** the same way at every halftime?	1	2	3	4	5

34. Which of the following is the biggest influence on what determines how you **hydrate** at halftime?
___(A)Availability of beverages
___(B) Difficulty of game
___(C)Team requirement
___(D)Temperature
___(E) Time playing

35. Are **snacks** that you consume during halftime:
___(A)Purchased and brought to the game by you?
___(B)Provided by the team?

Question (Please circle most common value)	Never		Some times		Always
36. To what extent do you **snack** the same way at every halftime?	1	2	3	4	5

37. Which of the following is the biggest influence on what determines how you **snack** at halftime?
___(A)Availability of snacks
___(B) Difficulty of game
___(C)Team requirement
___(D)Temperature
___(E) Time playing

Question (Please circle most common value)	Never		Some times		Always
38. Does the team recommend that you **hydrate** during halftime?	1	2	3	4	5

39. Does the team recommend that you **snack** during halftime?	1	2	3	4	5
40. Does the team make **beverages** available to you at halftime?	1	2	3	4	5
41. Are these the **beverages** you prefer?	1	2	3	4	5
42. Does the team make **snacks** available to you at halftime?	1	2	3	4	5
43. Are these the **snacks** you prefer?	1	2	3	4	5
44. To what degree does environmental **temperature** influence what you **drink** at halftime?	1	2	3	4	5
45. To what degree does environmental **temperature** influence what you **eat** at halftime?	1	2	3	4	5
46. To what degree does environmental **humidity** influence what you **drink** at halftime?	1	2	3	4	5
47. To what degree does environmental **humidity** influence what you **eat** at halftime?	1	2	3	4	5
48. To what extent does **altitude** affect what you **drink** at halftime?	1	2	3	4	5
49. To what extent does **altitude** affect what you **eat** at halftime?	1	2	3	4	5
50. Are you prone to **cramping** during games?	1	2	3	4	5

51- 57.To what extent do you believe your **cramps** are due to any of the following?

(Please circle most common value)	**Never**		**Some times**		**Always**
51. Dehydration	1	2	3	4	5
52. Fatigue	1	2	3	4	5
53. Improper diet	1	2	3	4	5
54. Low potassium	1	2	3	4	5
55. Low sodium	1	2	3	4	5
56. Not warmed up enough	1	2	3	4	5
57. Other _____	1	2	3	4	5

Question (Please circle most common value)	**Never**		**Some times**		**Always**
58. To what extent does **cramping** affect what you **drink** at halftime?	1	2	3	4	5
59. To what extent does **cramping** affect what you **eat** at halftime?	1	2	3	4	5
60. To what extent are you prone to **injuries**?	1	2	3	4	5

61. To what extent do **injuries** affect what you **drink** at halftime?	1	2	3	4	5
62. To what extent do **injuries** affect what you **eat** at halftime?	1	2	3	4	5

63. How many **hours** before tipoff/kick off do you consume your **pre game meal**?

___(A)1 hour-2 hours ___(B) 2 ½ hours-4 hours ___(C)4 ½ hours-6 hours

64. Do you consume any **fluids between** the pre-game warm up and kick-off/tip off?	1	2	3	4	5
65. Do you consume any **fluids during the first half** of the game?	1	2	3	4	5
66. Do your **pregame** drinking practices influence how you **hydrate at halftime**?	1	2	3	4	5
67. Do your **first half** drinking practices influence how you **hydrate at halftime**?	1	2	3	4	5
68. Do you consume any **food between** the pre-game warm up and kick-off/tip off?	1	2	3	4	5
69. Do you consume any **food during the first half** of the game?	1	2	3	4	5
70. Do your **pregame** eating practices influence how you **eat at halftime**?	1	2	3	4	5
71. Do your **first half** eating practices influence how you **eat at halftime**?	1	2	3	4	5
72. To what degree do you typically **lose weight** during a game?	1	2	3	4	5

73. Do you lose weight, gain weight, or sustain weight over the course of a typical game?

_____A. Lose weight (If so, how many pounds do you lose?:_____lb)

_____B. Gain weight (If so, how many pounds do you gain?:_____lb)

_____C. Sustain weight

* * *

Please return the completed questionnaire in the attached pre-stamped envelope. Thank you!