**Men's Body Area Shape Analysis and
Outdoor Performance Clothing Fit Preferences and Issues**

by

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ABSTRACT

The purpose of this study was two-fold: (1) to examine how BMI, height, and age of men related to eight body shape area shapes of men using quantitative data from SizeUSA (study 1); (2) to study men's fit preferences in outdoor performance clothing in relation to their BMI, height, and age through the analysis of qualitative data from four focus group interviews (study 2). Results of study 1 revealed that: (1) erect posture, flat seat, prominent seat, bow legs, prominent calf, prominent bicep, and abdomen prominence significantly differed by BMI; (2) erect posture, stooped posture, flat seat, prominent seat, and prominent bicep significantly differed by height; and (3) erect posture, stooped posture, flat seat, prominent seat, prominent calf, prominent bicep, and abdomen prominence significantly differed by age. Results of study 2 revealed the following themes and sub-themes were influenced by BMI, height, and age of men: fit (pant crotch, seat, hip fit; shirt proportion and fit; pant waist fit; pant leg fit), length (sleeve length; body length; leg length), and size (inconsistent sizing across brands; inconsistent sizing within a brand; 'Big and Tall' sizing).

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I. INTRODUCTION

Background to Men's Wear

Although women's wear historically has been the primary focus in fashion and apparel

research, men's clothing has recently been receiving more attention from both industry

professionals and academic researchers. Men are more fashion and appearance conscious than

previously, and with economic uncertainty in the U.S., men want to know that their purchases

are fashionable, look good on them, fit well, and come at a reasonable price. In general, men are

primarily concerned with the fit, size, and price of clothing (Frith & Gleeson, 2004). Hogge,

Baer, and Kang-Park (1988) found that men ranked fit as the most important factor when

selecting new clothing pieces.

Despite the importance of fit for male consumers, it is an under-researched topic. Only

recently have researchers begun to study the anthropometric data and clothing preferences of

men (Chattaraman, Simmons, & Ulrich, 2013). Previously, men were not known to experience as

many problems with clothing fit as women because men's clothing sizes more closely reflected

body measurements (neck, sleeve, inseam, chest, and waist). Now, with the growth in vanity

sizing (the manipulation of size and measurement numbers to appear more attractive to

customers), men's clothing is no longer exactly based on body measurements. Increased

variation in sizing and the lack of updated sizing standards for men's clothing may create

frustration for men when they buy clothing.

Sizing standards for the U.S. consumer began in the 1940's with the O'Brien and Shelton

(1941) study of women. In 1958, the standards were revised but not accepted by many in the

industry. In 1971, they were revised again, though no new anthropometric data were collected. In 1994, the American Society for Testing and Materials (ASTM) International created a sizing standard using the 1971 standard data in combination with the anthropometric data collected from servicemen and women of the Army and Navy in the late 1980's. ASTM International has continued to revise the standards and create new ones for different consumer markets, including men's wear. Though ASTM International strives to provide measurements to help manufacturers create clothing for the masses, it is not able to provide accurate standards because the anthropometric data are outdated. Simmons (2002) aimed to determine if ASTM sizing systems were sufficient using Best Fit Software, and concluded that women's standards were obsolete, and did not fit the current population.

In 1987, a study was undertaken in Sweden and West Germany to update body measurement records (Shannon, 1987). This study found that there were discrepancies in the measurements taken compared to previous data, and concluded that the population had changed in regards to body size and measurements. Though this study was not conducted in the US, it carries great importance because it reports the existence of outdated anthropometric data in relation to apparel and suggests that the issue is prevalent worldwide.

In 2004, the SizeUSA study three-dimensionally (3D) body scanned more than 10,000 participants across the U.S. This study currently offers the most up to date and accurate male and female data that are available to academic researchers and the industry. The technology of 3D body scanning made it possible for the SizeUSA study to collect accurate and reliable body measurements from thousands of people in a very short time ([TC^2].com, 2011). The Textile Clothing Technology Corporation ([TC]^2) body scanners, the leader in body scanning technology, were used for SizeUSA.

The importance of body scanning the U.S. population to create reliable anthropometric data at the current time stems from the increase in Americans' body weights and overall body size. According to the Centers for Disease Control (CDC) (2012a), U.S. adults have increased in size since the 1940's. Ogden, Carroll, Kit, and Flegal (2012) found 68.8% of adults are overweight or obese as defined by their Body Mass Index (BMI), which is calculated using the height and weight of an individual. BMI value is reported numerically and ranges are used to classify body size. For example, 25 to 29.9 is overweight, and 30 and above is obese (CDC, 2012b). Men in the U.S. have increased in weight and in BMI in the last decade (Ogden et al., 2012). It has been found that larger men desire different clothing fits to conceal themselves more than men with a lower BMI (Chattaraman et al., 2013).

Along with the importance of the men's body size in relation to the fit of clothing, the age of men has also been found to affect their clothing fit preferences (Hogge et al., 1988; Woodson & Horridge, 1986). This is not surprising given the fact that the male body changes in muscle and fat mass with age (Visser & Harris, 2012). Woodson and Horridge (1986) found that older men feel overlooked and that the clothing market offering is designed for the younger man. Based on the previous research, it is expected that men of different ages will have different needs in clothing.

Statement of Problem

There is limited research regarding fit and sizing preferences in men's ready-to-wear clothing (Sindicich & Black, 2011). Completed research on men's clothing preferences is either outdated or specific to a clothing type such as business apparel. Sindicich and Black (2011) conducted a recent study on men's preferences for business clothing and found that they were dissatisfied with fit. Similarly, Chattaraman et al. (2013) found that body size and age had a significant influence on men's apparel fit preferences. Despite the value of these findings, a large

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gap in research exists on the linkage between men's body shape and clothing fit preferences. The categorization of women's body shapes has been completed by many researchers (August, 1981; Connell, Ulrich, Brannon, Alexander, & Presley, 2003; Connell, Ulrich, Brannon, Alexander, & Presley, 2006; Simmons, Istook, & Devarajan, 2004); however men's body shape has not yet been successfully categorized. Sindicich and Black (2011) found that when men try to fit certain areas of their bodies, they have to sacrifice comfort and fit in other areas because they cannot find better options. Without knowledge and understanding of how men's bodies influence their fit preferences, manufacturers, designers, sizing standards organizations, and researchers continue to work in the dark with respect to men's clothing fit.

Another area of limited research relates to the growing outdoor and performance apparel category. In the last decade, performance apparel has had a 19.4% growth in sales (TEonline.com, 2012). Advances in technology and fibers have helped to boost performance apparel. Performance fabrics with performance properties are now used in base layer, athletic, and outdoor clothing. Men's fit preferences in performance outdoor clothing is a particularly under-researched topic and marks an important gap in the literature. In summary, there is first a lack of understanding and knowledge on the linkage between men's body shapes and their clothing fit preferences; and second, there is a lack of research on men's clothing fit preferences for outdoor performance apparel. The current study aims to address both these gaps in men's wear research.

Purpose of Study

The purpose of this study was two-fold: (1) to examine how BMI, height, and age of men related to eight body area shapes of men using quantitative data from SizeUSA (study 1); and (2) to study men's fit preferences in outdoor performance clothing in relation to their BMI, height, and age through the analysis of qualitative data from four focus group interviews (study 2).

Based on this research purpose, the following research questions were developed for study 1 and study 2. Research questions 1- 3 were addressed in study 1, while research questions 4-6 were addressed in study 2.

R1: How is BMI related to the body shape of men?

R2: How is body height related to the body shape of men?

R3: How is age related to the body shape of men?

R4: How does BMI influence men's fit preferences in outdoor performance clothing?

R5: How does body height influence men's fit preferences in outdoor performance clothing?

R6: How does age influence men's fit preferences in outdoor performance clothing?

Significance

The knowledge gained on men's bodies and clothing fit preferences from this study is of great significance for researchers and manufacturers. Understanding individualized satisfaction with clothing fit is a complex issue and cannot be generalized to all consumers (Labat & DeLong, 1990). Research on particular target markets based on age, BMI, and height is needed to understand the unique fit preferences of different groups. Insights gained from this study can help manufacturers and retailers remain competitive in a difficult financial market. Manufacturers often do not have the needed resources or money to invest the resources to analyze the body shapes for men when creating clothing, grading margins, or sizes. This research can provide information for manufacturers to understand the body area shapes of men for application in various areas of men's wear product development including pattern-making, grading, and sizing.

Understanding how men of different ages perceive clothing fit will guide manufacturers and designers to more efficiently create and offer clothing styles for different age groups of men.

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Additionally, researchers can better understand the differences in body shape, height, and size that exist among men of different ages. Research conducted in the 1960s and 1970s has shown that as men age, they have different fit preferences and need special tailoring to make their clothing fit correctly (Tate & Glisson, 1963; Kernalequen, 1978). The present research is significant because it can provide updated information in regards to the relation between age, body shape, and clothing fit.

The present research was also significant because it answered questions in the context of a specific clothing category, outdoor and performance apparel, which is under-researched in the academic realm. With the rise in demand for performance fabrics, and outdoor and performance apparel, this research is warranted at the current time. Since the fabrics used for outdoor and performance apparel are researched and engineered for greatest function, it is important that the fit of the clothing also be examined for function. The findings of the present study can assist manufacturers to design outdoor performance apparel that fits and performs well.

Lastly, in finding important trends on men's body shapes in relation to their age, BMI, and height within the SizeUSA data, this study could assist future researchers in developing a body shape classification system for men. The body shape information can also benefit male consumers directly by educating them on their bodies.

Definitions

Anthropometric Data- is derived from the field of anthropometry which studies the height, weight, size of the body to assess health status and body composition changes over a life time (McDowell, Fryar, Ogden, & Flegal, 2008)

Apparel Manufacturer – one that performs "all functions of creating, marketing, and distributing an apparel line on a continual basis" (Burns & Bryant, 2002, p. 137).

Body Area Shape Analysis – the analysis of certain area shapes of the human body for garment pattern making (SizeUSA, 2004). The areas of the body can be categorized as posture, shape, and body symmetry for pattern making.

Body Mass Index (BMI) – is an indicator of body mass calculated from the height and weight of an individual (CDC, 2012). Once the calculation is made, a number corresponding to a category is given. The 4 categories of BMI for adults are: underweight (18.5 and below), normal (18.5-24.9), overweight (25- 29.9), obese (30 and above) (CDC, 2012b).

Grading – *"Grading is the process used by manufactures to produce garments in a range of sizes"* (Schofield & LaBat, 2005, p. 13); Pattern grading is the scaling of a pattern to a different size by implementing important points of the pattern using an algorithm (Pattern Grading, 2012).

Fit- is a relationship between the garment and the body and ease is an area that can be measured (Sindicich & Black, 2011); "refers to the way a garment conforms to or differs from the body" (Workman & Lentz, 2000, p. 252).

Mass Customization – is the process of creating and manufacturing a large amount of products for the masses, but being able to customize the products in the process (Hye, 1998)

Sizing- "Sizing is the process used to establish a size chart of key body measurements for a range of apparel sizes" (Schofield & LaBat, 2005, p. 13).

Three-dimensional Body Scanning – is a technology that captures the image of the body in three dimensions (width, height, and depth) using a light source ([TC^2], 2012). An image of the body being scanned is produced in seconds along with hundreds of accurate measurements.

Vanity Sizing – a marketing technique to appeal to the consumer's vanity. It is the adjusting of fit model measurements and the assigning of lower numbers for sizes (Workman & Lentz, 2000).

II. REVIEW OF LITERATURE

This chapter provides background information on men's wear and problems in the sizing system for men's clothing. Following this, linkages between men's body shape, BMI, height, age, and fit preferences are discussed. Six research questions were developed from the review of the literature.

Background

History of Men's Wear

Looking back to the era preceding the Civil War, New York was beginning to expand with clothiers creating clothes in larger quantities with less customization (Zakim, 1999). However, during the civil war, soldiers were being outfitted in clothes based on their measurements (Christman & Kidwell, 1974) with an obvious need for some type of customization for each soldier. Around 1850, the ready-to-wear industry took off with the availability of the sewing machine and the rise of apparel manufacturers in the U.S. After the Civil War, ready-to-wear clothing availability was abundant, even for the lower classes. This was a very different concept as compared to previous decades when English and French tailors provided one of a kind garments for the wealthy. Now, almost two centuries later, men's wear is returning to custom-made pieces because of the lack of correct fit in clothing (Windisman, 2011). In recent years, technology has made it possible to obtain correct body measurements and to study the body for better garment customization. Body scanning for customization became possible with the availability of scanners through such companies as [TC]^2. The [TC]^2 scanner is a 3D body scanner that has evolved in the last three decades and is used by researchers, universities, designers, pattern makers, and retailers in the apparel industry. The scanners can

now obtain around 400 measurements from the human body in a few seconds with extremely high accuracy levels ([TC]^2.com, 2012). Once the scanner scans an object, most commonly a human for the [TC]^2 scanner, a 3D image is created from the software. The measurement information that is provided from the scanner software and the 3D image can be applied in the apparel making process ([TC]^2.com, 2012).

Men's Sizing Systems Over the Years

Men's sizes were created much earlier than women's sizes due to the need for uniforms for men during war time (Felsenthal, 2012). Though sizing charts were created for men's wear, the sizing systems and the practices used to create the sizing systems were not based on anthropometric data (Schofield & LaBat, 2005); rather, they were based on assumptions of the body (Ashdown, 1998). Sizing systems are a set of clothing sizes that are created by increasing measurements to fit a large range of target customers (Sindicich & Black, 2011). The goal of a sizing system standard for manufacturers is to create a size group that will fit as many consumers as possible while using the least number of sizes (Ashdown, 1998).

The first attempt to standardize apparel sizing in the U.S. was undertaken for women in the 1940's by O'Brien and Shelton, who measured 15,000 women. An early assumption regarding sizing and grading intervals was that girth and length measurements were in a fixed relationship with one another. This implies that if an individual is larger in circumference, then the individual is also taller. This relationship was invalidated by O'Brien and Shelton (1941). After analyzing the data, they proposed that there was a need for at least three sizing systems for women's wear due to newly discovered body shapes and a lack of fixed relationships between areas of the body (Felsenthal, 2012; O'Brien & Shelton, 1941). Their proposals were not accepted because the multiple sizing standards they created were complicated and impractical for the manufacturing world at the time.

The National Institute of Standards and Technology created a new sizing system for women's wear in 1958 titled the CS 215-58, which was not met with much enthusiasm. The standard became voluntary in the 1970's and then were antiquated by the 1980's. In 1971, the National Bureau of Standards updated the CS 215-58 sizing standard of 1958, but did not use any new measurement data (Boorady & Schofield, 2007). The new sizing standard was known as the PS 42-70.

ASTM was formed in 1898 by chemists and engineers from the Pennsylvania Railroad. At the time of its establishment, the organization was known as the American Section of the International Association for Testing and Materials. In 2001, the Society became known as ASTM International. They are a globally recognized leader in the development and delivery of international voluntary consensus standards (astm.org, 2013).

The ASTM standard for women is comprised of body measurements currently used by apparel manufacturers and retail organizations and anthropometric surveys conducted by the U.S. Army (Gordon, Churchill, Clauser, Bradtmiller, & McConville, 1988) and the U.S. Navy (Mellian, Ervin, & Robinette, 1990; Robinette, Mellian, & Ervin, 1990). These women's body measurements were derived originally from the PS 42-70 database (U.S. Department of Commerce, 1971), which was developed from anthropometric research conducted in 1941 by O'Brien and Shelton. The ASTM measurements are updated periodically by different committees; however, the inconsistency in members and the varying levels of expertise at each meeting can lead to flaws in the standardization (Personal Communication,. K. Simmons, June 12, 2013). Additionally, an obvious issue seen with the ASTM standards was that it uses only two measurements for each garment style for sizing (Ashdown, 1998). Two measurements do not account for all the lengths and circumferences of the body areas covered by the garment

(Ashdown, 1998). Today, the ASTM standards continue to be revised and updated for many markets including men's, women's, junior's, and children's.

It would have been nearly impossible for researchers in the 1940's to obtain all the measurements of the body for correct and complete garment sizing and fit. However, with the advances in technology in the 21st century, researchers have been able to obtain hundreds of measurements instead of just two for each garment style. SizeUSA was funded by the government and members of the apparel industry as a national sizing study in 2001 to initiate a mass body scanning effort to obtain current body measurements and body area information from the U.S. population. The [TC]^2 body scanner was used to obtain the measurements with a level of accuracy that hand measurements would never be able to replicate ([TC]^2.com, 2011). Nearly 11,000 men and women across the U.S. were scanned using the advanced technology of the [TC]^2 scanner ([TC]^2.com, 2011). This study was the first to obtain human measurements since the 1940's for women and men for sizing information in the U.S. (Zernike, 2004). Therefore, the SizeUSA data are the only current and accurate data that is representative of the entire U.S. population ([TC]^2.com, 2011).

Problems of the current sizing and grading systems. The SizeUSA study is proof that the apparel industry and researchers recognize problems with the current sizing standards for men and women (Schofield & LaBat, 2005). Researchers and the industry see a need for improvement in the current sizing and grading systems. Workman (1991) found that there was a lack of standardization for women's sizing based on current body measurements and suggested two solutions to the non-standardization in sizing. First, the study suggested that consumers should be educated more about clothing sizing and correct fit, and second that the advances in technology should make individualized fit more attainable. Labat and DeLong (1990) found that the sizing system flaws were affecting consumers on an emotional and psychological level.

Consumers often blame their bodies when a garment does not fit them properly instead of attributing poor fit to the flaws of the sizing system (Labat & DeLong, 1990).

Schofield and LaBat (2005) proposed that there was more to the sizing system than just the measurements. The grading, which is the amount increased or decreased between sizes, is also a major problem because it is not based on body measurements and therefore does not fit the body in key areas (Schofield & LaBat, 2005). These authors suggested adding seven new measurements to create grade rules in order to produce more accurate grading systems. Ashdown (1998) also made suggestions on how to improve the current sizing and grading system issues by dividing the population first by age, then by height and weight (circumference) to create numerous sizing systems that could accommodate a broad range of consumers.

Sindicich and Black (2011) studied the fit and size of men's business attire and found many problems with the current offering and sizing for men. They found a negative correlation between sleeve length measurement listed on the garment and the actual garment sleeve length, revealing problems with the accuracy of garment measurements. Sindicich and Black (2011) also questioned the reason for only five fixed measurements for men's wear (neck, chest, and waist circumference and the sleeve and pant inseam length). In men's suits, the chest and height are the two measurements used to select the best-fitting suit, thus suggesting that alterations will be made to other areas that do not fit well. Sindicich and Black (2011) also discussed the two measurements used for the sizing of men's dress shirts. The sleeve length and neck circumference are labeled, but the body length and waist circumference are unidentified. Overall, Sindicich and Black (2011) pointed out that there was a lack of clothing size information available to men. Manufacturers and retailers are not providing enough information to the consumer and are not consistent in their clothing sizing measurements.

Deviations from sizing systems. Companies deviate from the outdated ASTM standard sizing systems to be more unique and create a greater competitive advantage for themselves. They create their patterns from measurements or body sizes of their target customers (Frings, 1999). Though this makes the target customer happier when the clothing is designed for them, it only adds to the increasing size variation problems in the apparel industry. For example, a manufacturer or designer could begin with ASTM measurements and then manipulate the measurements based on their fit model, instead of changing the measurements based on their target population (Workman & Lentz, 2000). Since most standard measurements are adapted by individual manufacturers, size labels do not reflect actual measurements and consumers have problems in buying the same size from different manufacturers. The inconsistency of clothing sizing can also be attributed to manufacturers' and retailers' constant drive to attract the customer and stay ahead of the competition. If the size label number or letter is appealing and unique, customers may be more likely to purchase the more attractive size and return to that retailer (Workman, 1991).

Vanity sizing. Vanity sizing, which is a marketing technique to play on the customer's pride, is one reason companies manipulate their sizes (Frings, 1999; Goldsberry, Shim, & Reich 1996b). Workman and Lentz (2000) concluded that since 1976 there have been adjustments to fit model measurements and that companies have been assigning lower numbers for sizes, to play to their consumers' self-image. Vanity sizing began in women's wear to appeal to women's desires to wear a smaller size. It did not become an issue for men's wear until recently. Previously, men's wear was based on actual measurements (neck, sleeve length, waist circumference, and inseam length). Now with the inclusion of letter sizing (S, M, L, XL, XXL, etc.), the variation in sizing has become more prominent. Vanity sizing further complicates the issue of inappropriate fit (Pisut & Connell, 2007).

Size labels. Consumers are able to retrieve limited information from a size label on clothing and are not educated on what they are wearing. The size label only provides a size designation without any body measurement information (Workman & Lentz, 2000). Chun-Yoon and Jasper (1995) found that consumers are not able to gain enough information on the actual size of the clothing by the information provided because the size does not translate across manufacturers and brands. The non-standardization of clothing sizing for both men and women can be attributed to the variation in size labeling by retailers (Workman, 1991). Providing more anthropometric information to guide consumers could alleviate this frustration.

Men's Body Shape

There is limited research on the influence of men's body shape on their clothing fit preferences, in fact, men's body shapes are yet to be comprehensively classified. , Brannon (1971) conducted research to define men's body posture and build using somatometry. At the time, somatometry was the most advanced way to analyze and categorize the body. Photographs of the body were projected on a grid, and the shadows created a silhouette that was then analyzed. Though the research gave valuable information on the build and posture of a man, it did not address the overall shape or the body area shapes such as abdomen, seat, chest, arms, or legs. More recently, Fredrick and Peplau (2007) studied the male body and created a scale (see Figure 1) to show male bodies according to increasing and decreasing muscle and body fat. Though the scale is current and it does show how the male body changes with muscle and fat accumulation, the purpose of the scale was not to categorize the male body shape. Cottle (2012) recognized the need for categorization and classification of men's bodies and aimed to create a methodology for classifying men's body forms using a statistical clustering technique. His research used 3D body scans and it resulted in the creation of clusters with differing size and shape characteristics.
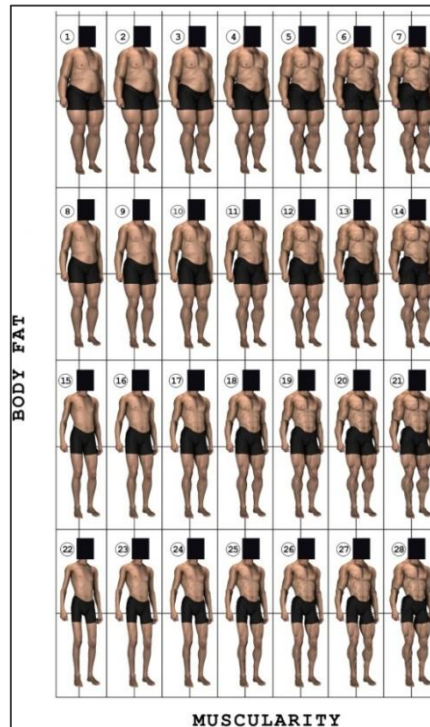
Figure 1. Scaled male body matrix (Fredrick & Peplau, 2007)

The most recent collection of male body scans for body analysis was conducted by the

SizeUSA initiative in 2004. The SizeUSA study (2004) collected a large amount of data

pertaining to male body area shapes (e.g., abdomen prominence, seat prominence, bicep

prominence, calf prominence). However, full body shape categorization has not yet been

completed. Hence, within the SizeUSA data, information on full body shapes was not generated

for men as it was for women. Instead, body area shape variables were listed in relation to shape,

posture, and body symmetry. The dataset included multiple ethnicities, a broad range of ages,

and provides weight and height of all participants. This information could be used in conjunction

with clothing fit preferences to create meaningful results for researchers and manufacturers.

Men's body shape and body size (BMI and height). From 1999 to 2010, male obesity

rates increased 8% while womens' rates showed no change (McDowell, Fryer, Ogden, and

Flegal, 2012). In 2010, 35.7% of all adults were obese in the US (McDowell, et al., 2012). There

was no significant difference in obesity rates among men of different age groups (McDowell et

al., 2012), implying that U.S. men in general across ages are heavier than ever before. According

to the National Health and Nutritional Examination Survey (NHANES), men's obesity prevalence also increased across multiple ethnicities (Non-Hispanic White, Non-Hispanic Black, and Mexican American) in the U.S. from 1988 to 2008. Between 1988 and 2008, non-Hispanic white male obesity percentages increased from 20.3% to 31.9% (Ogden & Carroll, 2010).

From 1960-1962, the National Center for Health and Statistics conducted a study on weight, height and body dimensions of adults ages 18-79 (Weight, height and selected body dimensions of adults: United States 1960-1962, 1965). The average height of the male was 68.2 inches and the average weight of men across ages was 168 pounds. In comparison to the study in the 1960's, McDowell et al. reported that from 2003-2006 the average height of an adult male was 69.4 inches and their weight was 194.7 pounds (2008). Based on the above statistics, it can clearly be concluded that men have increased in body size in the last 40-50 years; however, sizing and grading standards have not changed and do not reflect the increases in men's bodies.

The CDC stated that adults with higher BMI's accumulate more fat (2010). Thibodeau and Anthony (1990) found that men mostly accumulate excess fat at their abdomen, hips and buttocks. These changes in body weight and fat accumulation could lead to changes in body composition and shape. As mentioned before, there is limited research on men's full body shapes and BMI; however, literature exists concerning shapes of body areas of men. Fredrick and Peplau (2007) showed the increase of the calf and bicep prominence as the body increased in both muscle and fat. Schafer (1987) found that fat accumulation affects back posture. Based on the literature above, and the recognized lack of literature on the linkages between men's body area shapes and BMI, and body height, the following research questions were developed:

R1: How is BMI be related to the body shape of men?

R2: How is body height be related to the body shape of men?

Men's body shape and age. When boys are in their adolescent years, muscle growth is greater than fat increase (Croney, 1971). Garn and Young (1956) found that as men age, fat thickness increases in one area of the body and decreases in other parts of the body. Schwartz , et al.(1990) found that the fat in a man's body moves from the outer regions of the body such as the arms and legs to the center of the body and the organs. As men get older, they gain weight in their mid-section, especially at the waist. Poehlmanet al. (1995) found that men increase in abdomen circumference an average of 0.18 cm per year. As seen in Figure 2, fat accumulates in certain areas, such as the buttocks, thighs, and abdomen for men (Thibodeau & Anthony, 1990).
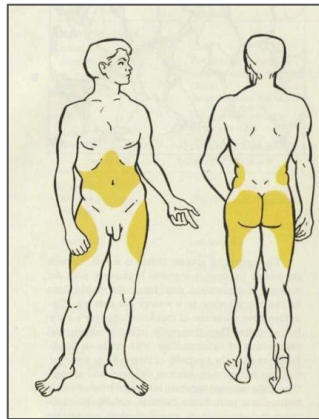
Figure 2. Fat accumulation of men (Thibodeau & Anthony, 1990)

It is important to look at the full body shape and body area shapes to ensure good fit as bodies change over time (Pisut & Connell, 2007). The fat and muscle of a man in combination with the height of the body can affect the shape of a man. It has been found that as a man ages, his height decreases. Beck (2011) found that men lose an average of 1.2 inches in height between the ages of 30 and 70 and up to 2 inches by the age of 80. Hence, age-related changes in fat accumulation, body height, and muscle mass may impact the body shape of men. Based on the literature discussed above, the following research question is proposed:

R3: *How is age related to the body shape of men?*

Men's Clothing Fit Preferences

Along with body measurements, preferences for fit and size must be investigated (Ashdown, 1998) when creating sizing systems and clothing for a target market. Pisut and Connell (2007) stated that most studies examine patterns or technology to see the problems with fit instead of asking the consumer first about what they prefer in regards to fit. Ashdown (2000) stated that there were two important components to creating a sizing system: 1) population measures in the form of anthropometric data from body scanning; and 2) understanding fit issues from the consumer perspective. Though body scanning technology makes it easier to obtain measurements for pattern-making for the masses, it is not able to capture information on personal clothing fit preferences (Workman & Lentz, 2000).

The topic of men's fit preferences is under-researched, although there is considerable research on women's fit preferences. Since fit is subjective, it must be assessed within each target market because it is influenced by gender, age, size, ethnicity, body shape, lifestyle, culture, and trends (Brown & Gallagher, 1992; Pisut & Connell, 2007). A few decades ago , it was assumed that men were less concerned with clothing and appearance compared to women (Kwon, 1997; Minshall, Winakor, & Swinney, 1982). However, Frith and Gleeson (2004) found that men are aware of their bodies and are concerned with the clothing they choose as a means to conceal and reveal their body. Men also value comfort over style (Craik, 1994). Thus, the fit of clothing from a comfort standpoint seems an important concern for men.

Men's fit preferences in business attire have been studied; however, research on men's casual, performance, or outdoor clothing is unavailable. Sindicich and Black (2011) found that men were not satisfied with the fit of available business apparel (suits, shirts and pants); 40% of male respondents stated that they had fit issues for particular garments and garment areas. Over 30% of male respondents had fit issues with sleeve length, pant length, and suit torso

circumference. Although clothing in workplace and daily life has become more casual and

performance based (Biecher, Keaton, & Pollman, 1999), there is no research on men's fit

preferences for performance and outdoor apparel.

      Fit preferences and BMI. The BMI is based on the relationship of the height and weight

of the human being. According the CDC, calculating the BMI of an adult is a good indicator of

overall body mass (2012b). As seen in Table 1, those with a BMI between 25.0-29.9 are

considered overweight and those with a BMI of 30 or above are considered obese (CDC, 2012b).

It has been reported that Americans have been increasing in size and BMI in the last decade,

which affects the way consumers fit into available clothing.

Table 1

BMI Results Scale

BMI	Weight Status
Below 18.5	Underweight
18.5 -24.9	Normal
25.0-29.9	Overweight
30.0 and above	Obese

Note. Adapted from "Body Mass Index Calculator" by the Centers of Disease Control and Prevention, 2012b,
Retrieved from
http://www.cdc.gov/healthyweight/assessing/bmi/adult_bmi/english_bmi_calculator/bmi_calculator.html

      Sindicich and Black (2011) found a linkage between BMI and clothing fit issues. Their

results showed that suit length and circumference measurements were negatively correlated.

Short males with higher BMI's found it difficult to find a suit to fit their upper body

circumference measurements and their shorter stature. Although no overall patterns were found

for BMI and clothing fit, there were numerous patterns that emerged as related to body size and

clothing fit. Sindicich and Black (2011) alsofound that larger men reported finding parts of

clothing to be too small, while smaller men found different parts of clothing to be too large.

Additionally, they found that heavier men had greater difficulty finding shirt neck sizes to fit properly and comfortably. The heavier men also found it frustrating to find a suit that fit both the waist and chest measurement. Some reported having larger chests and smaller lower bodies; they would fit their chest measurement first. However, when buying packaged suits, it was difficult to fit both the top and bottom correctly.

Chattaraman et al. (2013) recently conducted a study on men's fit preferences in relation to BMI. BMI was found to have a positive influence on the fit preferences for jeans, jeans waist placement, dress shirts, and polo shirts. The researchers concluded that as men increased in BMI, they prefered looser fits in their jeans, dress shirts, and polo shirts. Men also prefered higher waist lines as their BMI increased. The results of Sindicich and Black (2011) and Chattaraman et al. (2013), suggested that it is plausible and necessary to study the relationship of BMI and fit preferences in the outdoor performance clothing category and see if similar results are found. Hence, the following research question was proposed:

R4: How does BMI influence men's fit preferences in outdoor performance clothing?

Fit preferences and height. Men's stores typically sell pants in short, regular, and tall and vary the inseam length to fit shorter and taller men. Sindicich and Black (2011) shed some light on some of the problems that men still face in finding clothing to fit their height. They found pant leg length was the most reported issue that contributed to men's dissatisfaction with clothing fit. They also found that taller men stated that suit lengths including sleeve, inseam, shirt tail, jacket length, jacket sleeve and height were all too short. Conversely, shorter male participants stated that suit lengths were too long. Thus, the inseam length of the pants is not the only length measurement that needs to be adjusted for height. From these findings and the lack of additional findings from other studies, the following research question is warranted.

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R5: How does body height influence men's fit preferences in outdoor performance clothing?

Fit preferences and age. Hogge et al. (1988) studied the differences in clothing fit preferences among older and younger men. They found that men of all ages reported dissatisfaction with the fit of clothing available. Men of all ages stated that the length of the sleeves was an area of dissatisfaction. Younger men complained that the shoulder lengths were too short, the jacket lengths were too short or too long, and the waistlines were too large. The older men complained that the back width was too tight.

Another study conducted over two decades ago by Woodson and Horridge (1986) found that older consumers cannot find clothing that fits correctly because clothing is designed and the patterns are based on younger consumers. Tate and Glisson (1963) found that as men age, the number of fit problems increase. The waistlines need to be increased; lengths need to be shortened, and additional length needs to be added to the back for stooped posture. Kernalequen (1978) found that men, especially elderly men, have difficulty finding clothing that they want and fits well. In contrast to Tate and Glisson's (1963) and Kernalequen's (1978) findings, Hogge et al. (1988) concluded that older men had fewer fitting problems because they preferred looser fitting clothes.

A recent study focused on the fit preferences of male consumers in relation to age, body size and body image (Chattaraman et al., 2013). The researchers were able to obtain interesting results concerning the relationship between age and fit preferences. Age had a significant positive influence on the preferences for jeans waist fit, dress shirt fit, and polo shirt fit. The researchers concluded that as men age, they prefer higher jeans waists, and looser fit of dress shirts and polo shirts. Chattaraman et al. (2013) also found that fit preferences for specific clothing pieces were found in different clothing categories. Further research needs to be done to

understand the clothing fit preferences of men of different ages, particularly as it relates to

emerging clothing categories, such as outdoor performance clothing. Hence, the following

research question was proposed:

R6: How does age influence men's fit preferences in outdoor performance clothing?

III. METHODOLOGY

This research project was divided into two studies. The first study examined how BMI, height, and age of men related to eight body area shapes of men using quantitative data from SizeUSA. Study 2 considered men's fit preferences in outdoor performance clothing in relation to their BMI, height, and age through the analysis of qualitative data from four focus group interviews The following sections will discuss separately the sampling, data collection, detailed procedures, and data analysis for studies 1 and 2.

Study 1

SizeUSA Sampling

Secondary data from the SizeUSA study (2004) were analyzed to answer research questions 1-3 discussed in the literature review and to delineate important descriptive statistics on men's body area shapes. Therefore, the sample for study 1 was the sample used for the SizeUSA study (2004). As reported by SizeUSA (2004), the random sample was made up of over 10,000 participants who were scanned successfully using the [TC]^2 3D body scanner. The aim of the sampling strategy was to be representative of the U.S. population in the 21st century. This sampling strategy used the sampling model employed for the National Health and Nutrition Examination Survey (NHANES) III because of its great success in surveying over 33,000 persons from 1988-1994 (SizeUSA, 2004). The SizeUSA sample was made up of men and women belonging to four different ethnic groups (Non-Hispanic White, Non-Hispanic Black, Hispanic or Mexican American, and Other) of ages 18 years to 66+ years.

SizeUSA Data Collection

For the SizeUSA study, the body scan data was collected by using a portable [TC]^2 3D body scanner in 13 different cities in the US. The [TC]^2 3D body scanner can take over 400 accurate measurements of the human body in seconds and can create realistic images of the human being scanned. The accuracy of hand measurements and 3D body scanner measurements have been compared in a few studies (McKinnon & Istook, 2001; SizeUSA, 2004; Yoon & Radwin, 1994). The results have shown that electronic 3D body scanner measurements are more accurate and reliable than hand measurements. According to [TC]^2, the 3D body scanner has a point accuracy rate of less than 1 mm and circumference accuracy level of less than 3 mm (2012). Because of the accuracy, reliability, speed, and convenience of the body scanner, it is reasonable for the present study to use its body scanning data at the current time.

In addition to the collection of over 200 pre-determined measurements via the body scanner, the weight and height were taken for each participant. A questionnaire was then filled out by all the participants. It asked demographic characteristic questions that were paired with the anthropometric information for greater insight of the U.S. population. The questions covered characteristics such as location via zip code, ethnicity, age, gender, annual income, lifestyle, marital status, educational level, body size (weight perception), current employment, clothing sizes, use of clothing stores, and preference of clothing types. The demographic descriptives can be found in Table 4 in the Results chapter.

Study 1 examined the relationship between specific demographic characteristics and body area shape analysis data for men only. Body area shape analysis was defined by the SizeUSA study as "garment based shape indicators." Many apparel companies were interested in the findings of the national study, and a goal for SizeUSAwas to report results for pattern-making and garment fit. There were 22 body area shapes recorded for the men in the SizeUSA study,

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which included variables that were relevant to shape, posture, and body symmetry for pattern-making. There were more variables pertaining to posture and body symmetry than for body shape variables. Study 1 used five shape variables (flat seat, prominent seat, prominent biceps, prominent calf, and portly - revised to prominent abdomen) and three posture variables (erect posture, stooped posture, and bow legs) from the SizeUSA study to analyze. Body symmetry variables were not included in the scope of this analysis. Table 2 lists these variables and provides the definitions for each.

Table 2

Body Area Shape Analysis Variables with Definitions

Shape	Posture
Flat Seat: "This is a "garment-based" shape indication that conveys that the subject has a less than average seat prominence to the degree an alteration would be required to reduce fabric fullness in the seat area."	*Erect Posture:* "This is a "garment-based" shape indication that conveys the amount of garment alteration (moving fabric from the back to the front) at the top of the shoulder required to eliminate garment distortion due to the erectness of the subject's posture."
Prominent Seat: "This is the same as Flat Seat, but with greater than average seat prominence."	*Stooped Posture:* "This is the same as Erect Posture but indicates amount of fabric moved from the front to the back over the top of the shoulder."
Prominent Biceps: "This is a "garment-based" shape indication that conveys that the subject has a bicep area condition that requires an alteration to create more room in the garment for adequate fit."	*Bow Legs:* "This is a "garment-based" shape indication that conveys that the subject has a side-to-side knee prominence in the leg to the degree that an alteration is required to prevent garment distortion in the pant."

(Continued)

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Table 2 (Continued)

Prominent Calf:
"This is a "garment-based" shape indication that
conveys that the subject has either a large
prominent calf in the lower leg relative to average
or a rearward prominent calf to the degree that an
alteration is required to prevent garment distortion
in the pant."

Portly (prominent abdomen):
"This is a "garment-based" shape indication that
conveys that the subject has a torso shape that
would indicate that better garment fit would be
achieved using a "Portly" garment model with
greater fullness in the front half of the garment."

Note. Adapted from "Men's Shape Analysis Definitions" by SizeUSA, The National Sizing
Survey, 2004, [Data book and Data File].

Data Analysis

The SizeUSA data were analyzed to answer research questions 1-3 to uncover linkages

between men's BMI, body height, age, and eight body area shapes. For research question 1, BMI

was calculated from the height and weight of each man. BMI was categorized according to the

CDC definitions and was a categorical independent variable; body shape was a categorical

dependent variable. Cross tabulations using the Chi Squared tests were performed because it was

appropriate to predict the probability of body shape (categorical) being related to BMI

(categorical).

For research question 2, body height was a categorical independent variable, and body

shape was a categorical dependent variable. The body height was reported as a continuous

variable in the SizeUSA data, but the researcher grouped it into categories according to apparel

industry standards for men's height. Apparel industry standards provide short, regular and tall

lengths for the different heights of men. The Carhartt sizing charts (refer to Table 3) were chosen

as a basis for the height categories which are: (1) the short inseam length is around 30 inches and appropriate for an average height of 5'3" to 5'7"; (2) the regular inseam length is around 32 inches appropriate for an average height of 5'7" to 5'11"; (3) the long inseam length is around 34 inches appropriate for an average height of 5'11" to 6'3"(Carhartt size chart, regular, short, & tall sizes, 2012).   Based on this information, study 1 categorized the body height into three categories as follows: short (5'3" to 5'7"), regular (5'7" to 5'11"), and long (5'11" to 6'3") (see Table 3). Chi squared tests were performed because they predicted the probability of body height and body shape being related.

Table 3

Body Height Categories

Category	Height of Male	Inseam length
Short	5'3" to 5'7"	28
Regular	5'7" to 5'11"	30
Tall	5'11" to 6'3"	32

Note. Adapted from "Carhartt Size Chart, Regular, Short, & Tall Sizes" by Tractor Supply Company
2012, Retrieved from
http://www.tractorsupply.com/wcsstore/ConsumerDirectStorefrontAssetStore/images/products/SSizeChar/mens.html

For research question 3, age was a categorical independent variable, and body shape was a categorical dependent variable. Age was reported by SizeUSA (2004) as a categorical variable with six age groups: 18-25, 26-35, 36-45, 46-55, 56-65, and 66+. Chi squared analyses were performed because they predicted the probability of age and body area shapes of men being related.

Study 2

Sampling

The focus group interviews employed a purposive sample of men 19-70 years of age who were actively involved in outdoor activities and use outdoor performance apparel regularly. The men were recruited using three methods: 1) sending emails to the mailing list of an outdoor apparel manufacturing company; 2) sending emails to the faculty and students of the College of Agriculture and College of Building Sciences at Auburn University; and 3) distributing flyers at Gander Mountain, an outdoor retail store. Men who were interested in participating in the focus groups were screened via a telephone or email conversation asking their age, and three yes or no questions. The first question asked about their participation in the following activities: hunting, fishing, hiking/climbing, or canoeing/kayaking. The second and third questions were specific to hunting and asked if they hunted regularly and wore camouflage clothing often. Participants who answered yes met the screening criteria and were notified of the date, time, and location of their focus group.

Procedures

The focus groups were conducted on multiple days within the time span of two months. There were four focus groups with a maximum of nine participants and a minimum of three participants. The men were not organized into a specific focus group, but rather all ages and activities were placed in the four focus groups to gain the highest participation rate possible. After the focus groups were completed, the data were separated into age groups and activities. The SizeUSA study divided the men into six age groups. Because of the financial and time constraints, study 2 combined the age groups into two (20-50 and 50+). The reason for the age divide was based on previous research that found that individuals consider themselves mature at age 50 and possess different needs, opinions, and lifestyles (Bernstein, Ottenfel, & Witte, 2011;

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Leventhal, 1997). The outdoor activities were broken into two main categories: (1) hunting and fishing; and (2) hiking, climbing, canoeing, and kayaking. The reason for this grouping was that clothing worn for hunting and fishing was generally different from that worn for hiking, climbing, canoeing, and kayaking.

The men arrived at the focus group location on the date and time that they were provided. The focus groups were conducted at the Lab for Usability, Communication, Interaction, and Accessibility (LUCIA) at Auburn University. The focus groups were led by a moderator who used a guide (see Appendix B) to lead the discussion. Each focus group lasted up to one hour and was videotaped and voice recorded for transcribing. Once the focus groups were completed, the men were asked to fill out a questionnaire (see Appendix C).

Instrumentation

Focus group discussion. A Focus Group Interview Guide was created to guide the discussion in each focus group (see Appendix B). The questions asked in the beginning of the focus group sessions were generalized to help the men become comfortable and begin to think of the clothing they wore regularly. Open ended and focused questions were asked for each clothing type. At the end of the interviews, the moderator went back to make sure topics were covered that related to the research questions and questions requested by the external funding agency. Some questions were altered to be appropriate for the participants used outdoor activity participants. A PowerPoint presentation was created with images of different clothing items worn for specific outdoor activities to assist the participants in verbalizing their preferences.

Questionnaire. A questionnaire (see Appendix C) was created by the researchers to accompany the focus groups findings. The questionnaire included demographic information, self-reported body height and weight information for BMI calculation, and self-identified body area shapes. Because a male body shape scale has not been developed, the body area shape

variables used in study 1 from the SizeUSA data were used in the questionnaire. The variable names were altered to reduce confusion for the participants. Questions pertaining to age and body size, lifestyle, clothing size, preferred stores, and clothing type were taken from the SizeUSA questionnaire to maintain consistency with study 1. However, the questions were modified in order to be relevant to outdoor performance apparel. Additional detailed questions on clothing type preferences, clothing brand preferences, dollar amount annually spent on outdoor clothing, outdoor activity levels, and clothing size preferences were also included.

Participant codes were used to link the questionnaire to the focus groups discussion. A member number was assigned to each participant when they arrived. The member number was written on the first page of the questionnaire near their name. The member number was comprised of two digits; the first digit represented the specific focus group, and the second digit represented theparticipant's number in the focus group. Inside the focus group lab, a sheet of paper was placed in front of each seat at the table with the appropriate member numbers. The participants were asked to sit according to their member number. Because the interviews were video recorded, there was no reason the participants needed to say their number or name before speaking. The member number was there to ensure that the researchers could pair each participant's discussion with his questionnaire data.

Data Analysis

Research questions 4-6 inspired the questions asked in the focus groups. The data were analyzed using content analysis and grounded theory approach. Palmquist (1980) defines content analysis as a research tool for finding actual content, such as words, themes, phrases or sentences and calculating their presence and prevalence in the discussion of focus groups. The study also used the grounded theory approach developed by Glaser and Strauss in the 1960's to analyze qualitative data. The grounded theory approach is a method of qualitative research in which

comparative analysis occurs to discover themes and ultimately a theory through systematic

examination of large amounts of data (Glaser & Strauss, 1967). It was found to be an appropriate

method for this study because it guided the researcher to remain "grounded" to the original data

and form general conclusions from specific comments. The approach followed a strict process of

open coding, axial coding, and lastly theory development (refer to Figure 3). First, the data from

the focus groups were collected and organized into broad categories by counting the frequency of

similar responses. Next, a more focused level of coding was performed to narrow the large

categories into themes and sub-themes. Then, axial coding was used to make interconnections

between the themes and identify relationships that were detected during the coding process. If

the process was performed well, a theory could be developed to explain the phenomenon.
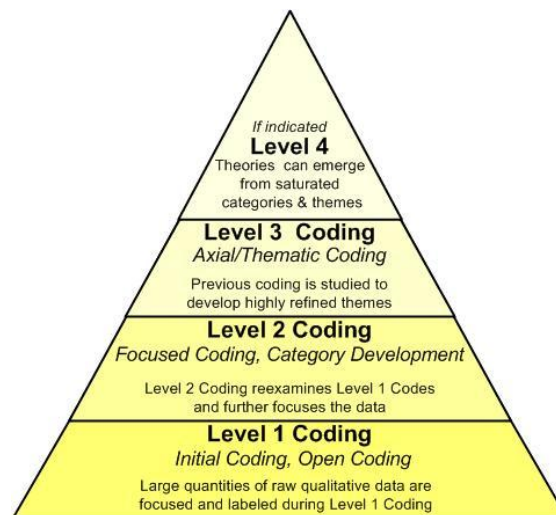
Figure 3. Grounded Theory Approach Diagram (1967) http://qual-
rip.blogspot.com/2012/06/resources-for-doing-grounded-theory.html

For study 2, the content analysis began with reviewing the video and transcripts from the

focus groups discussions in great detail. The discussion of the participants was organized and

generally coded, broken down into categories and themes, and then re-examined for content and

for the themes' relation to each other to discover interesting findings that related back to

literature. After the coding processes were completed, the information was reviewed in relation

to the three variables from the research questions (BMI, height, and age). The member numbers

on the questionnaires and the numbers used in discussion during the focus groups enabled the

researcher to make the two parts connect. Results were reported according to the themes and

BMI, height, and age. Refer to Figure 4 for the detailed process of computing the frequencies

during the coding process. Along with the qualitative results, descriptive statistics were run to

find information concerning general demographic information and clothing size information.
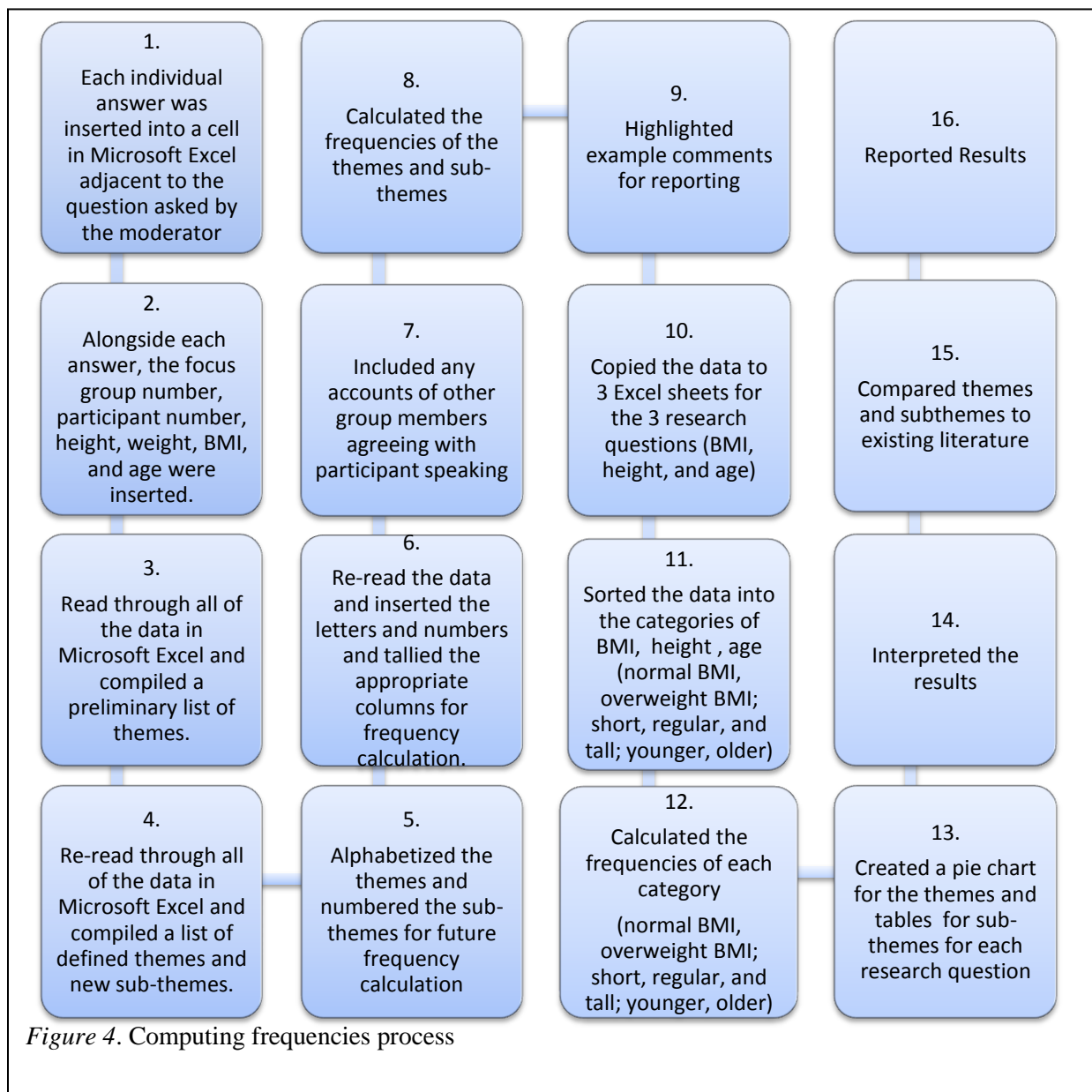
Figure 4. Computing frequencies process

IV. RESULTS

Research reporting is for two studies. The main goal of study 1 was to use the SizeUSA (2004) secondary data set to examine the relationships between men's BMI, body height, and age (independent variables) and the eight identified men's body area shapes (dependent variables). A quantitative research approach was employed for study 1 and SPSS software was used to analyze the quantitative data. Following study 1, study 2 sought to understand men's clothing fit preferences for outdoor performance clothing and how these preferences related to their BMI, height, and age. To address this objective, study 2 employed a qualitative research approach through the use of focus group interviews and a structured questionnaire. The grounded theory approach was used to analyze the qualitative data collected through the focus groups. Descriptive statistics were also generated from study 2 using the SPSS software. The following sections discuss the results of study 1 and study 2.

Study 1

Secondary data from the SizeUSA study, completed in 2004, were analyzed to answer three research questions:.

R1: How is BMI related to the body shape of men?

R2: How is body height related to the body shape of men?

R3: How is age related the body shape of men?

Data Selection Criteria

Of the 10,000 male and female participants of the SizeUSA study, all of the 3,691 male participants were used for the present study. The research was focused on male body area shape analysis, and, thus, the sample was condensed to just male information. Variables pertaining to

the three research questions were chosen from the SizeUSA data set. Weight (pounds) and

height (inches) for BMI calculation, and age variables were taken from the original data set for

analysis. The SizeUSA data set reported age as six separate age groups (18-25, 26-35, 36-45, 46-

55, 56-65, and 66+). These were combined into one age variable in SPSS for analysis. Eight of

the 22 body area shapes analysis variables provided by the SizeUSA (2004) studywere used for

analysis: erect posture, stooped posture, flat seat, prominent seat, bow legs, prominent calf,

prominent bicep, and portly (abdomen prominence).

Preliminary Analysis

After deriving the required data set for study 1 from the main data set, BMIs were

calculated in Microsoft Excel using the [weight(lbs) / (height (in))^2] x 703 formula (CDC, 2000)

based on men's heights and weights. Next, the data set was taken into the SPSS statistical

software for descriptive and inferential analysis. The demographic information from the

SizeUSA (2004) study for the male subset was used for the present study and can be referenced

in Table 4.

Table 4

SizeUSA Male Demographic Characteristics

Variable	Categories	Percentages (%)/ Subject Scanned	
Location	Cary, NC	13%	468
	Columbia, MO	13%	473
	Dallas, TX	13%	467
	Miami, FL	1%	28
	New York, NY	4%	130
	Chattanooga, TN	10%	372
	Los Angeles, CA	10%	365
	San Francisco, CA	3%	116
	Portland, OR	6%	231
	Lawrence, MA	8%	310
	Winston-Salem, NC	0.5%	17
	Buford, GA	7%	243
	Glendale, CA	12%	453
Ethnicity	Non-Hispanic White	47%	
	Non- Hispanic Black	19%	
	Hispanic	9%	
	Other	8%	
Age	18-25	27%	
	26-35	21%	
	36-45	23%	
	46-55	17%	
	56-65	8%	
	66+	4%	
Income	Under $25,000	43%	
	$25,000-$49,000	22%	
	$50,000- $74,999	14%	
	$75,000- $99,999	8%	
	$100,00 or more	9%	
Lifestyle	Very active	37%	
	About as active as others	44%	
	A little less active	15%	
	Much less active	4%	
Marital Status	Married	38%	
	Single	44%	
	Widowed	1%	
	Single, living with partner	6%	
	Divorced or separated	7%	

(Continued)

Table 4 (Continued)

Educational Level	Less than high school	8%
	High school graduate	28%
	Some college or technical school	29%
	College graduate	22%
	Post-graduate	13%
Weight Perception	Quite a bit overweight	10%
	A little overweight	32%
	About the right weight	51%
	Underweight	7%
Current Employment	Professional/managerial	28%
	Office/clerical	5%
	Craftsman/laborer/farm	16%
	Service or sales related	16%
	Retired	7%
	Student	19%
	Military	1%
	Homemaker	1%
	Not currently employed for pay	13%
Clothing Sizes - Men	Small	4%
	Medium	29%
	Large	37%
	Extra Large	26%
	XXL – or larger	11%
	Big/Tall	4%
Stores	Department Stores	49%
	Specialty Stores	44%
	Warehouse Stores	16%
	Factory Outlets	28%
	Liz Claiborne	2%
	JC Penney	42%
	Kmart	21%
	Kohl's	12%
	Sears	22%
	Target	28%
	Sport Specialty Stores	30%
	Off Price Stores	26%
	Mail Order Catalogs	14%
	Wal-Mart	32%

(Continued)

Table 4 (Continued)

Clothing Types- Men		
	Knit outerwear t-shirts	46%
	Sweaters or vest	34%
	Causal pants or slacks	65%
	Outerwear jackets or coats	49%
	Running shoes or sneakers	71%
	Sweatshirts	43%
	Jeans	79%
	Dress shirts	43%
	Knit Polo shirts	49%
	Woven sports shirts or blouses	12%
	Suits, sport coats, blazers	27%
	Athletic socks	61%
	Work shoes	42%
	Neckties	25%

Note. Adapted from "SizeUSA Demographics-Males" by SizeUSA, The National Sizing Survey, 2004, [Data book and Data File].

Research Question Analysis

BMI and body area shape analysis. Research question 1 examined whether the eight body area shapes of men differed by their BMI. To examine this, BMI was first calculated in Microsoft Excel and then recoded in SPSS to be grouped according to the four weight classes determined by the CDC (underweight, normal, overweight, and obese). The body area shapes were not grouped together, but left as eight separate variables. Cross-tabulations with Chi squared tests were run between each of the body area shape categories and BMI categories using a significance level of $p =.02$. Thus eight results were found for research question 1. Chi squared test results revealed that the following seven body area shapes of men significantly differed by their BMI: erect posture [χ^2(3, N =3550) = 15.27, p = .002], flat seat [χ^2(3, N =3550) = 133.75, p = .000], prominent seat [χ^2(3, N =3550) = 35.98, p = .000], bow legs [χ^2(3, N =3550) = 35.98, p = .000], prominent calf [χ^2(3, N =3550) = 283.49, p = .000], abdomen prominence [χ^2(3, N =3550) = 386.87, p = .000], and prominent bicep [χ^2(3, N =3550) = 360.918, p = .000]. Stooped posture did not differ significantly by BMI [χ^2(3, N =3550) = 1.07, p = .784].

Table 5 contains bar charts representing the results of the body area shapes that significantly differed by the BMI categories. As reflected in the charts, the occurrence of the erect posture increased in the higher BMI categories. The overweight (37%) and obese (38%) categories of BMI had more occurrences of erect posture than the underweight (25%) and normal categories (31%). For flat seat, the obese (13%) BMI category had the highest occurrence of flat seat which was 10% greater than the other BMI categories. For prominent seat, the results showed that the occurrence of the prominent seat was greater in the lower BMI categories (underweight: 12%; normal: 15%) than the higher BMI categories (overweight: 9%; obese: 7%).

For bow leg posture, the underweight (20%) and normal (11%) BMI categories showed the more occurrences of bow legs than the overweight (5%) and obese categories (3%). For the prominent calf, the lower BMI categories (underweight: 28%; normal: 23%) had higher occurrences of calf prominence than the overweight (6%) and obese (2%) BMI categories. For prominent bicep, the bicep prominence percentage increased in the overweight (12%) and obese (30%) BMI categories as compared to the underweight (2%) and normal (2%) BMI categories. For abdomen prominence (portly), the occurrence increased from 0% for underweight and 6% for normal categories to 16% for overweight and 39% for the obese BMI categories.

Table 5

Significant Body Area Shape Differences by BMI

BMI and Erect Posture	BMI and Flat Seat

BMI and Prominent Seat	BMI and Prominent Calf

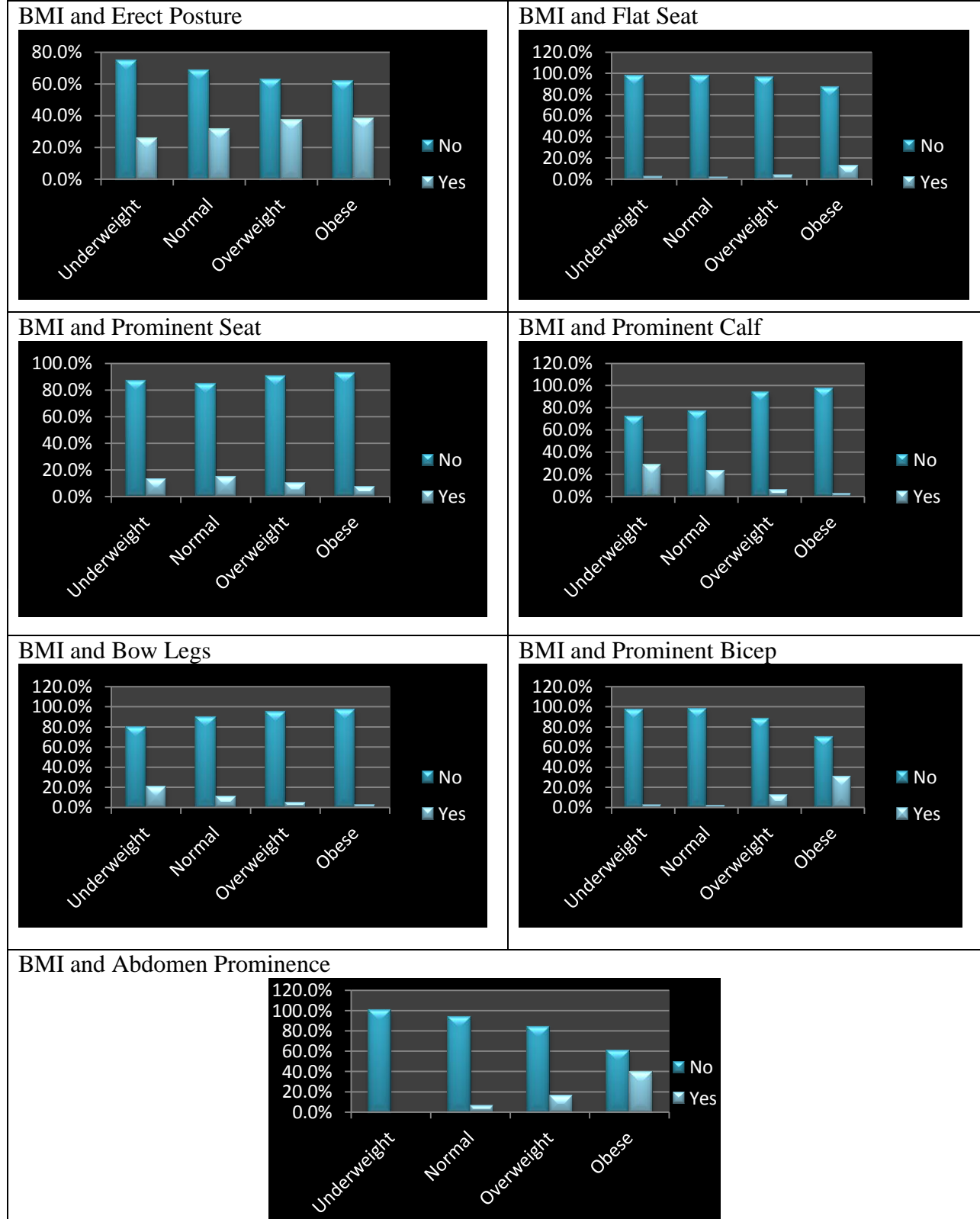| BMI and Bow Legs	BMI and Prominent Bicep

BMI and Abdomen Prominence

Body height and body area shape analysis. Research question 2 examined whether the eight body area shapes of men differed by their body height. To examine this question, three height groupings were created: short = 5'3"-5'7"; regular = 5'7"-5'11"; and tall = 5'11"-6'3". Next, the height variable was recoded and values were assigned to the three height groups. Cross-tabulations with Chi squared tests were run between the eight body area shapes and the three height categories using a significance level of $p =.02$. Thus, eight results were found for research question 2. Chi squared test results revealed that the following body area shapes of men significantly differed by their height: erect posture [χ^2(2, $N =3173$) = 35.70, $p = .000$], stooped posture [χ^2(2, $N =3173$) = 30.48, $p = .000$], prominent seat [χ^2(2, $N =3173$) = 14.82, $p = .001$], and prominent bicep [χ^2(2, $N =3173$) = 17.01, $p = .000$]. Flat seat [χ^2(2, $N =3173$) = 1.90, $p = .387$], bow legs [χ^2(2, $N =3173$) = 0.09, $p = .954$], prominent calf [χ^2(2, $N =3173$) = 3.07, $p = .216$], and abdomen prominence [χ^2(2, $N =3173$) = 7.36, $p = .025$] did not differ significantly by height.

Table 6 contains the bar charts representing the results of the body area shapes that significantly differed by the height categories. For erect posture, it was found that the short height category (42%) had a higher occurrence than the regular (34%) and tall (28%) height categories. As seen in the bar chart, a gradual decline of occurrence from short to tall is apparent. The occurrence of erect posture is 14% higher for the short (5'3"-5'7") category than for the tall (5'11"-6'3") category. Conversely, the taller height categories (23%) showed a higher occurrence of stooped posture than the short (13%) and regular (16%) height categories. The occurrence of a prominent seat was greater for the taller height categories (14%) than for the regular (11%) and short (8%) categories. The occurrence of the bicep prominence was greater in the regular (14%) and tall (18%) height categories than for the short category (10%).

Table 6

Significant Body Area Shape Differences by Height
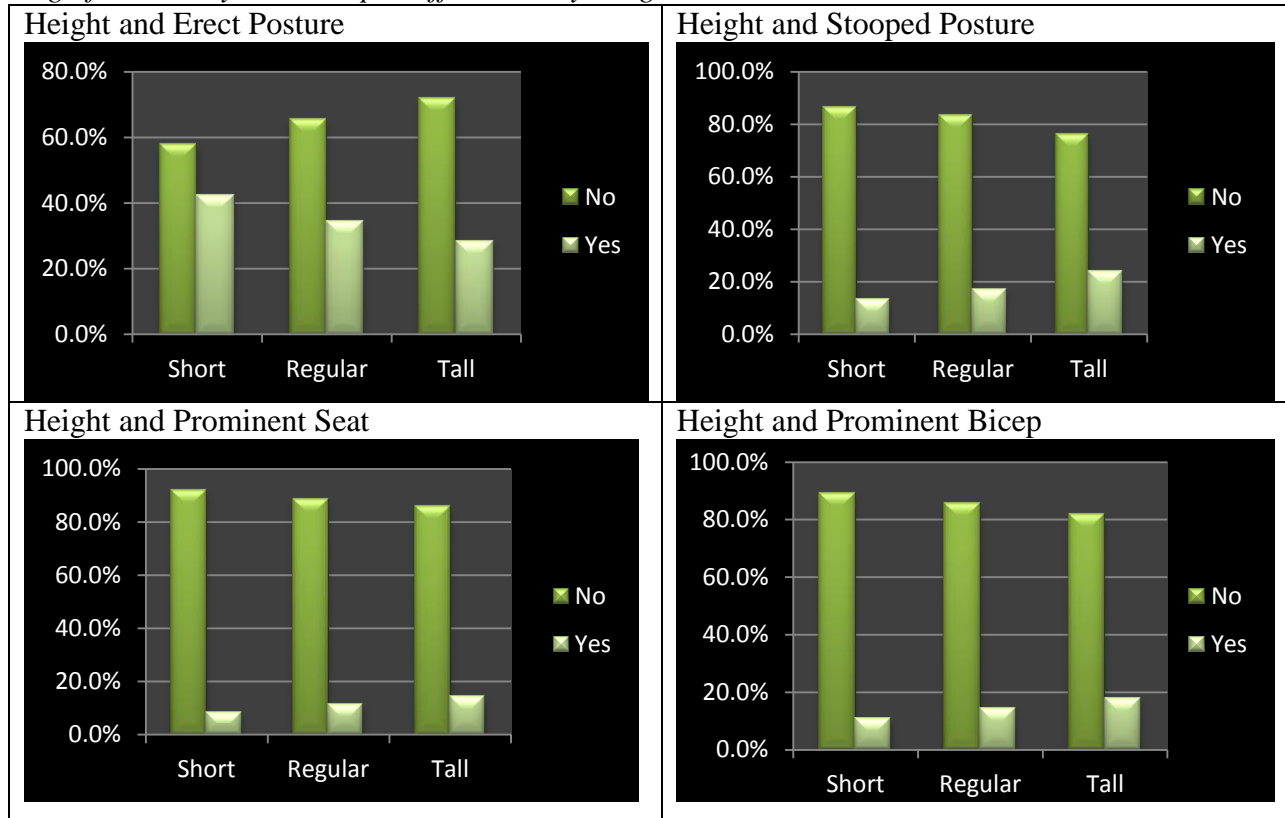
Age and body area shape analysis. Research question 3 examined whether the eight body area shapes of men differed by their age. Values were assigned so that the six age groups [18-25, 26-35, 36-45, 46-55, 56-65, 66+] could be identified in the results. Cross-tabulations with Chi squared tests were run between the eight body area shapes and the age groups using a significance level of $p = .02$. Thus, eight results were found for research question 3. Chi squared test results revealed that the following body area shapes of men significantly differed by age: erect posture [$\chi^2(5, N = 3691) = 34.46, p = .000$], stooped posture [$\chi^2(5, N = 3691) = 34.69, p = .000$], flat seat [$\chi^2(5, N = 3691) = 73.80, p = .000$], prominent seat [$\chi^2(5, N = 3691) = 121.68, p = .000$], prominent calf [$\chi^2(5, N = 3691) = 36.66, p = .000$], abdomen prominence [$\chi^2(5, N = 3691)$

$= 258.32, p = .000$], and prominent bicep [$\chi^2(5, N = 3691) = 23.52, p = .000$]. Bow legs [$\chi^2(5, N = 3691) = 5.85, p = .322$] did not differ significantly by age.

Table 7 contains the bar charts representing the results of the body area shapes that significantly differ by age. The occurrence of erect posture was higher (38% and 40%, respectively) for the younger age groups (26-35 and 36-45) than (28% and 25%, respectively) for the older age groups (55-65 and 66+). Conversely, the older age groups showed a higher occurrence of stooped posture (29%) than the younger 26-35 age group (13%). An increase in the occurrence of stooped posture was seen from the younger to the older age groups especially between the age groups 56-65 (20%) and 66+ (29%).

As reflected in the flat seat and prominent seat charts, the flat seat occurrence was greater for the older age groups (13%) than for the youngest group (2%); while the prominent seat occurrence was greater for the younger age groups (19%) than the older age groups (56-65: 2% and 66+: 1%). The 56-65 age group was found to have the highest occurrence of flat seat while the youngest age group (18-25) was found to have the highest occurrence of prominent seat. For prominent calf, it was found that younger men (18-25) had the highest occurrence of prominent calves (16%). As men's age increased, the occurrence decreased slightly until the fifth age group (56-65) where an increase was seen in calf prominence (11%). For prominent biceps, age groups 26-35 (16%) and 36-45 (16%) were found to have the highest occurrence of bicep prominence. The prominence was seen to decrease at 56 years and older (11%). For abdomen prominence (portly), the occurrence was much higher for the older age groups (50%) as compared to the youngest 18-25 age group (8%).

Table 7

Significant Body Area Shape Differences by Age

Age and Erect Posture	Age and Stooped Posture

Age and Flat Seat	Age and Prominent Seat

Age and Prominent Calf	Age and Prominent Bicep

Age and Abdomen Prominence
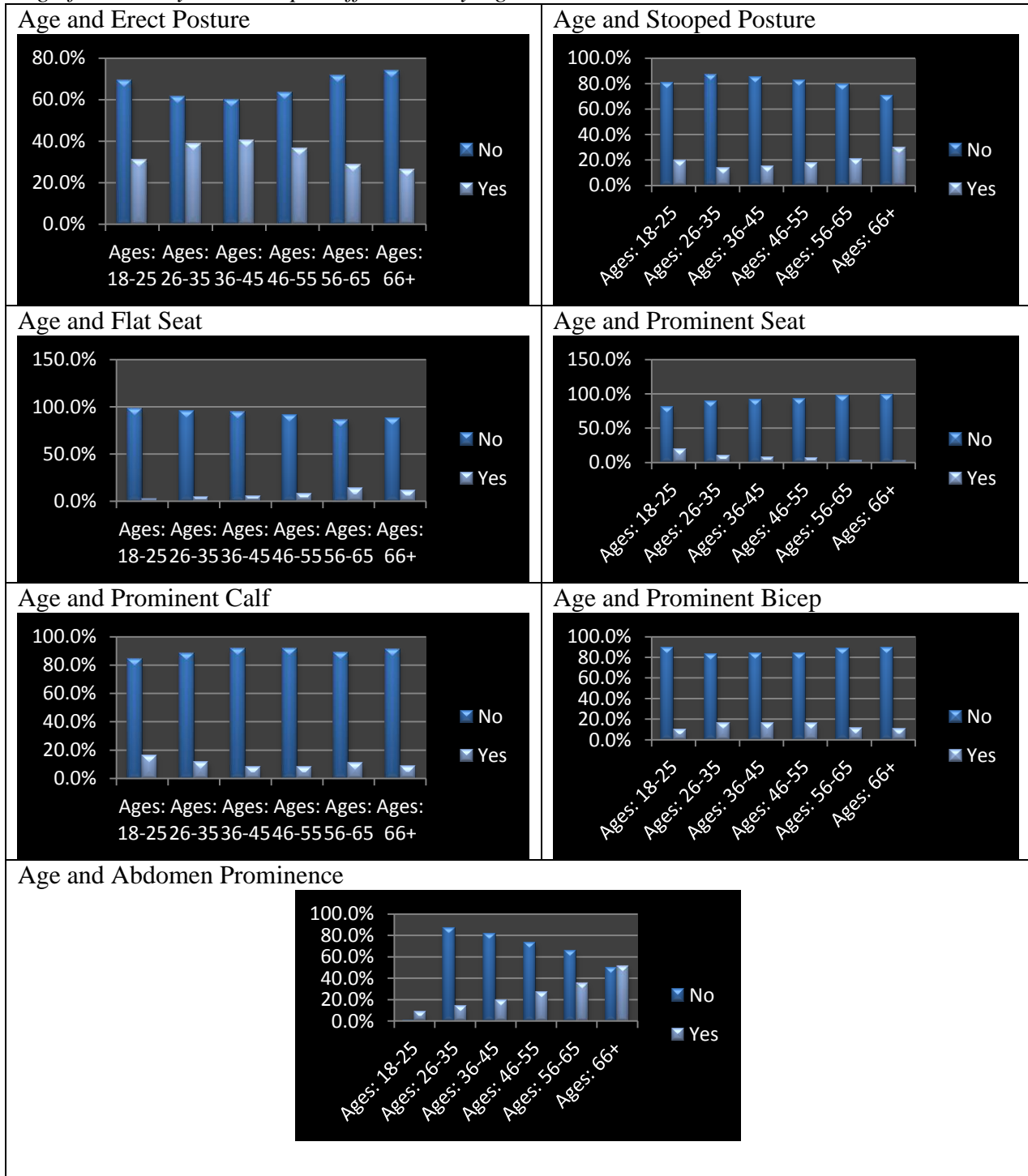
Study 2

Study 2 employed a qualitative research approach through focus group interviews and a structured questionnaire. The grounded theory approach and methodology were used to interpret the qualitative data from the focus group interviews, generate themes, and answer the research questions. Descriptive analyses were run on the quantitative information collected from the questionnaires to reveal insights and patterns to the focus group data. In the following sections, the descriptive results will be reported first, followed by the discussion of qualitative thematic results in relation to each research question.

Descriptive Analysis

A total of 21 men participated in the focus group interviews and completed the structured questionnaire. The data from the questionnaires were entered into the SPSS software for descriptive analysis. In addition to demographic information (age, ethnicity, income and education), involvement in outdoor activities, shopping behavior, clothing type and size purchased, and body area shape information were obtained in the questionnaire. Frequencies were calculated for each of the above categories (see Table 8 for details). A majority of the participants were between the ages of 21 and 25 (47%) and the mean age of the participants was 32 years. A majority of the participants also reported having finished some college or technical school (42%) orhaving completed a graduate degree (23%). All participants were non-Hispanic White (100%). With respect to income status, the largest distribution was between $10,000 - $20,000 (23%) and $20,000 - $30,000 (19%). Further, a majority of the participants (86%) spent '$500 or under' per year on outdoor performance apparel.

Table 8

Sample Characteristics and Frequency Distributions

Characteristic		n	%
Age (N = 21)	**21-25**	**10**	**47.7%**
Mean Age = 32	26-35	4	19.2%
	36-45	1	4.8%
	46-55	1	4.8%
	56-63	4	19.2%
	Answer Withheld	1	4.8%
Ethnicity (N= 21)		n	%
	Non-Hispanic White	**21**	**100%**
	Non-Hispanic Black	0	0.0%
	Hispanic	0	0.0%
	Asian/Pacific Islander	0	0.0%
	Native American/Alaska Native	0	0.0%
	Other	0	0.0%
Income (N= 21)		n	%
	Under $10,000	2	9.5%
	$10,000 to $20,000	**5**	**23.8%**
	$20,000 to $30,000	4	19.0%
	$30,000 to $40,000	1	4.8%
	$40,000 to $50,000	2	9.5%
	$50,000 to $60,000	2	9.5%
	$60,000 to $70,000	2	9.5%
	$70,000 to $80,000	1	4.8%
	$80,000 to $90,000	0	0.0%
	$90,000 to $100,000	0	0.0%
	$100,000 or over	2	9.5%
		n	%
Education (N =21)	8th Grade or less	0	0.0%
	Some High School	1	4.8%
	High School Degree	2	9.5%
	Some College or Technical School	**9**	**42.9%**
	College Degree (4 years)	0	0.0%
	Some Graduate School	4	19.0%
	Graduate Degree	5	23.8%

(Continued)

Table 8 (Continued)
Sample Characteristics and Frequency Distributions

Money Spent on Performance Apparel (N= 21)	n	%
$0.00 - $250.00	**9**	**42.9%**
$250.00 - $500.00	**9**	**42.9%**
$500.00 - $750.00	1	4.8%
$750.00 - $1000.000	0	0.0%
$1000.00 or more	2	9.5%

Additional descriptive information obtained on involvement in outdoor activities, shopping behavior, clothing size and type purchased, and body area shape information are summarized in Tables 9, 10, and 11. Focus group participants reported participating in hunting (95%), hiking (33%), kayaking (42%), and fishing (23%). A majority of participants purchased 3-10 pieces of outdoor performance clothing a year (76%). Of these, 46% of their clothing purchases were made from catalog, TV, and Internet sources and 28% from sport specialty stores. In addition to the information in Table 9on stores and brand frequently used, participants also noted the stores/brands in an open-ended question. The most frequently noted stores included Amazon, Bass Pro Shop, Under Armour, Duluth, 5.11, and Mountain Hardware. The most frequently listed outdoor performance apparel brands included Filson, Royal Robbins, Drake, Tru-Spec, and Campmor.

Table 9

Activity and Shopping Frequency Distributions

Characteristic		n	%
Hunting Participation Frequency (N = 21)	Everyday	0	0.0%
	2-5 Times a Week	4	19.0%
	Once a Week	5	23.8%
	Once a Month	5	23.8%
	2-5 Times a Year	**6**	**28.6%**
	Never	1	4.8%
Fishing Participation Frequency (N = 21)		n	%
	Everyday	1	4.8%
	2-5 Times a Week	**5**	**23.8%**
	Once a Week	4	19.0%
	Once a Month	3	14.3%
	2-5 Times a Year	4	19.0%
	Never	4	19.0%
Hiking/ Climbing Participation Frequency (N = 21)		n	%
	Everyday	0	0.0%
	2-5 Times a Week	4	19.0%
	Once a Week	0	0.0%
	Once a Month	5	23.8%
	2-5 Times a Year	**7**	**33.3%**
	Never	5	23.8%
Kayaking/ Canoeing Participation Frequency (N = 21)		n	%
	Everyday	0	0.0%
	2-5 Times a Week	0	0.0%
	Once a Week	0	0.0%
	Once a Month	6	28.6%
	2-5 Times a Year	**9**	**42.9%**
	Never	6	28.6%
Number of Pieces Purchased (N= 21)		n	%
	0-2	3	14.3%
	3-5	**8**	**38.1%**
	6-10	**8**	**38.1%**
	11-15	0	0.0%
	16 or more	2	9.5%
			(Continued)

Table 9 (Continued)

Type of Store Shopping Frequency (N = 60)	n	%
Department Stores	2	3.3%
Specialty Stores	3	5.0%
Warehouse Stores	2	3.3%
Factory Stores	8	13.3%
Sport Specialty Stores	**17**	**28.3%**
Catalog, TV, Internet	**28**	**46.7%**

Specific Store Shopping Frequency (N = 95)	n	%
Wal-Mart	8	8.4%
K-mart	0	0.0%
Bass Pro Shops	14	15.6%
Cabela's	6	6.3%
Dicks Sporting Goods	12	12.6%
Kinnucan's	4	4.2%
REI	8	8.4%
Alabama Outdoors	1	1.1%
L.L. Bean	5	5.2%
Academy	**15**	**15.7%**
Gander Mountain	11	11.6%
Southern Trails	5	5.2%
Other	6	6.3%

Brand Type Shopping Frequency (N = 100)	n	%
Arc'teryx	2	2.0%
Cabela's	5	5.0%
Carhartt	**14**	**14.0%**
Columbia	**14**	**14.0%**
Magellan	4	4.0%
Marmot	7	7.0%
Mountain Hardware	8	8.0%
Nike	8	8.0%
The North Face	4	4.0%
Patagonia	3	3.0%
Reebok	0	0.0%
Russell Athletic	1	1.0%
Under Armour	13	13.0%
Wrangler	9	9.0%
Other	8	8.0%

With respect to the types of clothing items that men wore for the outdoor activities (see

Table 10 for details), results showed that for hunting, men preferred to wear the following items

most: T-shirts (long or short) (9%), work shoes/boots (8%), heavy/wool socks (8%), rain jackets

and outerwear pants (7%), and outerwear jackets (6%). For fishing, men preferred to wear the

following items most: T-shirts (long or short) (13%), shorts (10%); button-down shirts (9%), rain

jackets and outerwear pants (7%), outerwear jackets and cargo pants (5%). Men preferred to

wear the following items the most for hiking: shorts (9%), lightweight fleece shirts/ hoodies

(8%), heavy/wool socks (7%), rain jackets and outerwear pants (6%), and running shoes and

work shoes/boots (6%). For kayaking, men preferred to wear the following items the most: shorts

(19%), T-shirts (long or short) (16%), rain jackets or outerwear pants (9%), lightweight fleece

shirts/hoodies (7%), and outerwear jackets (6%). Participants also listed the following items that

they frequently wore as outdoor performance wear: flip flops/ sandals/ crocs, micro-fleece

garments, waders, and gloves.

Table 10

Clothing Type by Activity Frequencies and Distributions

Clothing Item	Hunting (N= 173)		Fishing (N= 96)		Hiking/Climbing (N= 132)		Kayaking/Canoeing (N= 67)	
	n	%	n	%	n	%	n	%
¼ Zip Pullover	7	4.0%	2	2.1%	5	3.8%	2	3.0%
Lightweight Fleece Shirts/Hoodies	9	5.2%	3	3.1%	**11**	**8.3%**	5	7.5%
T-shirts (short/long)	**16**	**9.2%**	13	13.5%	9	6.8%	**11**	**16.4%**
Button Down shirts	9	5.2%	9	9.4%	4	3.0%	3	4.5%
Polo shirts	4	2.3%	3	3.1%	1	0.8%	1	1.5%
Sweaters	3	1.7%	2	2.1%	3	2.3%	0	0.0%
Vests	4	2.3%	0	0.0%	3	2.3%	2	3.0%
Utility Vests	7	4.0%	2	2.1%	3	2.3%	1	1.5%
Casual pants	6	3.5%	4	4.2%	2	1.5%	1	1.5%
Slacks	1	0.6%	0	0.0%	0	0.0%	0	0.0%
Cargo Pants	6	3.5%	5	5.2%	5	3.8%	2	3.0%
Jeans	9	5.2%	2	2.1%	6	4.5%	0	0.0%
Shorts	4	2.3%	10	10.4%	12	9.1%	13	19.4%
Outerwear Jackets	12	6.9%	5	5.2%	7	5.3%	4	6.0%
Rain Jackets or Outerwear Pants	**13**	**7.5%**	7	7.3%	9	6.8%	6	9.0%

(Continued)

Table 10 (Continued)

Sweatshirts	4	2.3%	3	3.1%	2	1.5%	1	1.5%
Sweatpants	4	2.3%	0	0.0%	1	0.8%	0	0.0%
Base layer shirts	9	5.2%	3	3.1%	7	5.3%	4	6.0%
Base layer pants	**10**	**5.8%**	1	1.0%	6	4.5%	3	4.5%
Athletic Socks	6	3.5%	3	3.1%	6	4.5%	2	3.0%
Wool or Heavy Socks	**14**	**8.1%**	2	2.1%	**10**	**7.6%**	2	3.0%
Running shoes	0	0.0%	4	4.2%	9	6.8%	3	4.5%
Work Shoes/Boots	**15**	**8.7%**	4	4.2%	9	6.8%	1	1.5%
Other	1	0.6%	5	5.2%	3	2.3%	0	0.0%

With respect to sizing (see Table 11), the largest distribution of participants reported wearing letter size 'large' for shirts, pants, and outerwear clothing. Men reported purchasing shirts in regular length (68%) and a larger percentage wore pants with a size 32 inch waist (21%) and 32 inch inseam length (47%).

Table 11
Men's Sizing Frequency Distributions

Characteristic		n	%
Shirt Letter Size (N = 26)	Medium	5	19.2%
	Large	**8**	**30.8%**
	X- Large	**8**	**30.8%**
	2X- Large	4	15.4%
	3X- Large	0	0.0%
	4X- Large – 6X- Large	1	3.8%
Shirt Length Size (N= 19)		n	%
	Regular	**13**	**68.4%**
	Tall	6	31.6%
Pant Letter Size (N= 23)		n	%
	Medium	3	13.0%
	Large	**10**	**43.5%**
	X- Large	8	34.8%
	2X- Large	1	4.3%
	3X- Large	1	4.3%
	4X- Large – 6X- Large	0	0.0%
			(Continued)

Table 11 (Continued)

Pant Number Size (N = 28)		n	%
	28-30	0	0.0%
	31	2	7.1%
	32	**6**	**21.4%**
	33	4	14.3%
	34	3	10.7%
	35	2	7.1%
	36	2	7.1%%
	38	4	14.3%
	39	0	0.0%
	40-42	4	14.3%
	44-46	0	0.0%
	48-50	1	3.6%
Inseam Length Size (N= 21)		n	%
	28"-30"	2	9.5%
	31"	0	0.0%
	32"	**10**	**47.6%**
	33"	2	9.5%
	34"	3	14.3%
	Longer than 34"	1	4.8%
	Don't Know	3	14.3%
Outerwear Letter Size (N = 25)		n	%
	Medium	2	8.0%
	Large	**9**	**36.0%**
	X- Large	8	32.0%
	2X- Large	4	16.0%
	3X- Large	1	4.0%
	4X- Large – 6X- Large	1	4.0%

With respect to body shape, Table 12 shows that men self-reported the rectangle body shape the most (57%) followed by the round/circle shape (23%). Fredrick and Peplau's (2007) Scaled Male Body Matrix was used to question men's self-perceived body size. The scale was made of 28 illustrations representing different ratios for body fatness and muscularity. A majority of men self-perceived themselves to be a number 17 (19%) or 18 (19%) on the scale (found in Figure 2). A larger percentage of participants also self-reported possessing a prominent calf (61%), normal bicep prominence (85%), average posture (back) (61%), a normal leg stance

(90%), flat (47%) and medium (47%) abdomen prominence, and a medium buttock prominence

(52%).

Table 12

Body Area Shape Frequency Distributions

Characteristic		n	%
Body Shape (N = 21)	Inverted Triangle	2	9.5%
	Hourglass / X-shape	1	4.8%
	Rectangle	**12**	**57.1%**
	Triangle	1	4.8%
	Round/Circle	5	23.8%
		n	%
	3	1	4.8%
Body Size (N= 21)	4	1	4.8%
	5	1	4.8%
	8	2	9.5%
	9	1	4.8%
	10	1	4.8%
	11	1	4.8%
	16	3	14.3%
	17	**4**	**19.0%**
	18	**4**	**19.0%**
	24	1	4.8%
	25	1	4.8%
		n	%
	Small Calf	0	0.0%
Calf Size (N= 21)	Normal Calf	8	38.1%
	Prominent Calf	**13**	**61.9%**
		n	%
	Small Bicep	0	0.0%
Bicep Size (N = 21)	**Normal Bicep**	**18**	**85.7%**
	Prominent Bicep	3	14.3%
		n	%
	Stooped Posture	3	14.3%
Posture (N= 21)	**Average Posture**	**13**	**61.9%**
	Erect Posture	5	23.8%
			(Continued)

Table 12 (Continued)

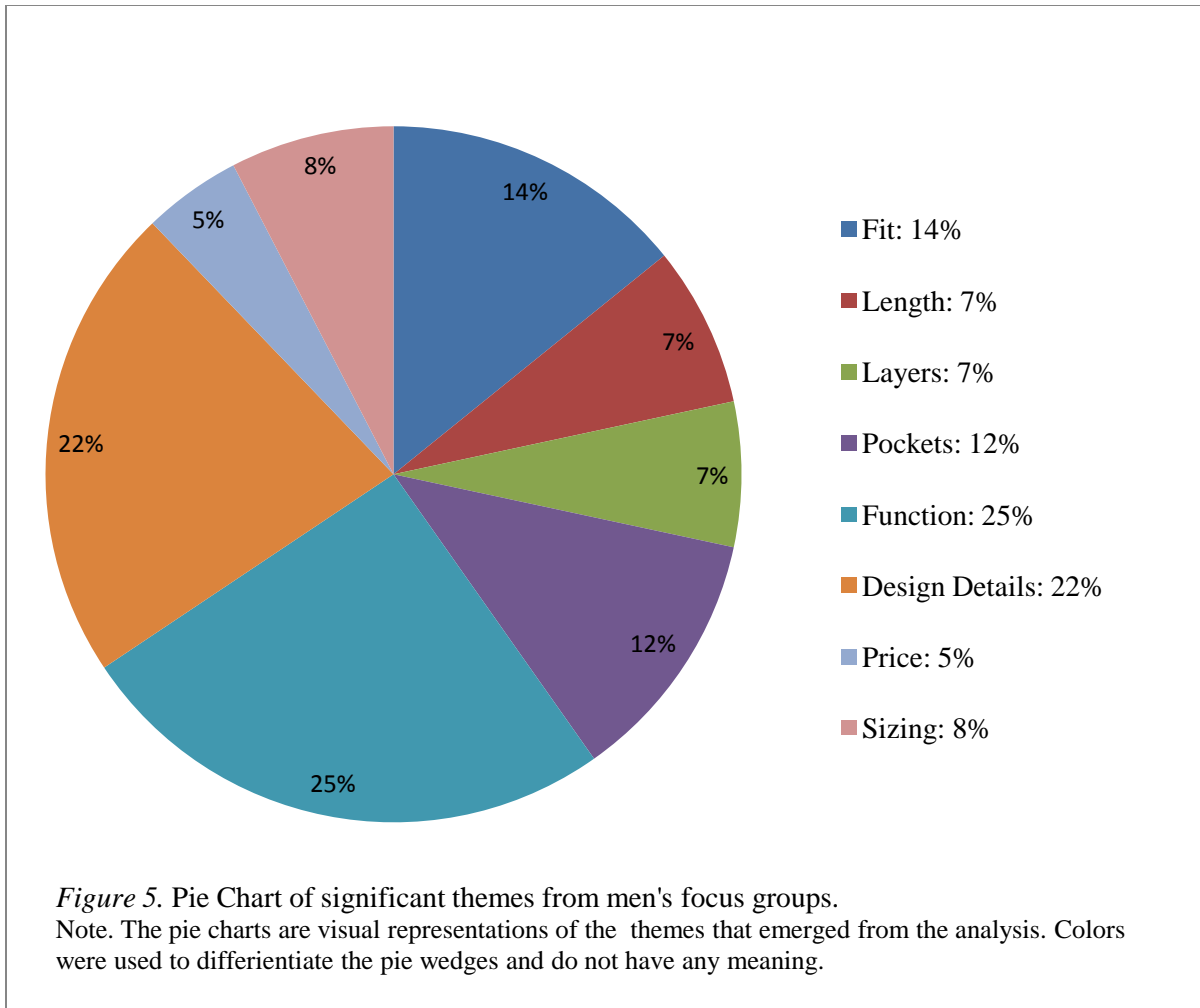|		n	%
	Knocked Knees	1	4.8%
Leg Stance/ Posture (N = 21)	**Normal Stance**	**19**	**90.5%**
	Bow Legs	1	4.8%
		n	%
	Flat Abdomen	**10**	**47.6%**
	Medium Abdomen	**10**	**47.6%**
Abdomen Prominence (N = 21)	Prominent Abdomen	1	4.8%
		n	%
	Flat Buttocks	6	28.6%
Buttocks Prominence (N = 21)	**Medium Buttocks**	**11**	**52.4%**
	Prominent Buttocks	4	19.0%

Research Question Analysis

Four focus group interviews were conducted and consisted of men aged 21 – 63, who were actively involved in outdoor activities (hunting, fishing, hiking, and kayaking). The questions in the focus group interviews were scripted to ensure similar discussion to answer each research question and to find recurring themes. Qualitative data analysis using the grounded theory approach (Glaser & Strauss, 1967) was employed to analyze the data and answer the three research questions. The focus group interviews were supplemented by the questionnaire data (self-reported age, weight, and height information), which was used to analyze themes in the qualitative data.

The four focus group interviews were audio and video-recorded and transcribed in verbatim. The present research implemented three of the four steps of the grounded theory Approach. First, the transcribed discussion from the participants was organized and generally coded into themes (initial coding). The data was then collapsed further into focused themes and sub-themes (focused coding). Lastly, the themes were reexamined for their content, their relations to each other, and their relations to the literature (axial coding). The final coded data

were then related to the three research questions. In coding the responses of the participants, if a participant answered a direct question from the moderator with a "yes", "yeah", or positive shake of the head, the response was counted in the frequency. If participants in the focus group agreed with a participant speaking, the other participants were added to the discussion and their response was added to the frequency count. If a participant spoke about the same topic twice over the length of the interview, all accounts were counted. If the participant repeated himself in the same group of speech, the topic was counted once.

Emergent Themes

The themes and sub-themes that were revealed from the focus group interviews are reported holistically first and then discussed in detail in relation to each research question. The focus group interviews (FGI) revealed eight themes that were significant and relevant to the study: function, design details, fit, pockets, length, layers, sizing, and price (see Figure 5). From the eight themes, fit, length, and sizing and their sub-themes will be discussed in relation to the three research questions posed in this thesis. Discussion of function, design details, pockets, layers, and price does not directly relate to the research questions posed in this study, and is included in Appendix D.

Figure 5. Pie Chart of significant themes from men's focus groups.
Note. The pie charts are visual representations of the themes that emerged from the analysis. Colors were used to differientiate the pie wedges and do not have any meaning.

BMI and men's fit preferences in outdoor performance clothing

BMI was calculated from the self-reported height and weight of each participant (on the questionnaire). The four BMI categories were condensed to two categories (normal and overweight) for the qualitative analysis. The normal BMI category covered underweight and normal categories and values 18.5-24.9. The overweight BMI category covered both overweight and obese categories and values 25 and above. A total of 5 participants belonged to the normal BMI category and 16 participants belonged to the overweight BMI category.

Fit. The discussion on fit was similar for both normal and overweight BMI categories. The following sub-themes of fit were evident from the discussions of both groups of men: Pant

crotch, seat, hip fit; shirt proportion and fit; pant waist fit; and pant leg fit. However, when examining the frequencies of the sub-themes of fit (see Table 13), it was clear that the overweight BMI category expressed more issues with specific aspects of fit. 'Pant crotch, seat and hip fit' was the most frequently discussed sub-theme of fit. When men were asked about the fit of pants, men stated how important crotch fit was to them.. One overweight BMI participant stated, "And the heavier you are, the more that means." The participants also stated that the crotch seam placement and type was important to them. For example, an overweight BMI male stated: "To me, all that goes back to the inseam [crotch]. The U or the V. It's the room. If you've got room to start with, you can bend over." This participant was making reference to the new Wrangler jean style called the 'U shape', where the crotch is in a more defined 'U' shape than the traditional 'V'. It was designed to provide more room in the crotch area (Wrangler, 2012). Participants also mentioned that the seams for the crotch inserts could create chaffing. With respect to fit at the crotch, men could recognize the improper crotch fit because it made them uncomfortable:

> "The crotch region is just the biggest thing for me. I mean, they're just, I mean like I bought a pair of blue jeans, just regular old blue jeans, and I couldn't wear them. And I mean they're practically brand new. I just can't wear them anymore. They're cut so tight. I need a little room to breathe here." (Overweight BMI male)

Shirt fit was the next most important theme in relation to BMI. One overweight BMI male stated:

> "I know Columbia shirts fit real well. Especially for me being a big guy, I feel like they're big enough in the arms and you know they fit well. So you know I buy a lot of them…That's something I gravitate towards first because I know they fit well." (Overweight BMI male)

The overweight BMI men also raised fit issues with shirts not fitting proportionally. The shirts would fit in some areas but would either be too small or too large in others:

56

"For a loose dress shirt this is an 18 and a half, for me to wear a tie with. But look at the sleeves (they are long), and look at where the body is, I've got a lot of extra fabric. But I prefer this rather than something that is skin tight here (points to chest area), but fits the shoulders and fits in collar. I would much rather throw on a jacket or something, or a sweater… I get told by my wife that this doesn't look good, and I say that I don't care, it fits." (Overweight BMI male)

Fit in the arm area was discussed minimally, but when it was discussed the topic was found to be important. The men found it annoying to be restricted by the armholes/sleeves of shirts and jackets when performing activities. One overweight male commented:

"I think the biggest thing I've noticed recently is the arms are getting smaller or I'm getting bigger either one, probably a little bit of both. It's just tight up under the arm and you can't move in it. And I've almost ripped some shirts not just because I'm huge but because they're restrictive."

Overall, when asked about the fit of pant legs during activities, the men did not state specific issues with leg fit, but rather stated that they preferred a balance between looseness and fitted pant legs. The men did say they wanted more stretch at the thigh and knee for better movement and fit:

"I think it's hardest at the knee, not just the thigh. Just trying to bend down in some cases." (Overweight BMI Male)

"In the knees. Like just above, a stretch point just above, like an inch or two above the knees so it bends. Then that knee can move. And just below the waistband. I have found that I have a few pair of shorts that have elastic material just below the waistband, and it's about an inch down and that really helps with bending and moving." (Overweight BMI Male)

"Maybe, if there was a way they could do more stretch in the knee and more reinforcement that would be really good." (Normal BMI Male)

The normal BMI group did not speak about pant leg fit often, but one male in this category discussed fit issues around the thigh area: "No, like I said earlier, the only thing kinda in the thighs have been restricting in the past… Yeah, but because that's an issue I've had with more than one pair."

Pant waist fit was occasionally mentioned in the discussions of both groups of men,

although more often mentioned by overweight BMI men (refer to Table 13). Overweight BMI

men preferred pants waists that had extra stretch and ease. Many men spoke about elastic and

adjustable front closures to make the waist more comfortable and easier to wear during activities:

> "I like the elastic. I can go from you know spring or fall you know with just a shirt. Then
> when I go in the winter and wear two or three layers. The waistband of the pant expands
> as I am tucking clothes in and out." (Overweight BMI Male)

> "It's got the little pull, but I just like the adjustable. I think that's one of the best things
> ever with the pants, is the adjustable waist band. Because with me, I don't feel like I
> could ever have a problem with them ones you can pull down. But now I always wear a
> belt. You know a lot of people wear pants and don't wear a belt. That is just a preference.
> It's just that is something that I always seem to do so that doesn't seem to be a problem to
> me. Going back to what group member three said to start with; if they fit to start with."
> (Overweight BMI Male)

Table 13

Frequency Counts for Fit Preferences/Issues by BMI Groups

Sub-themes	*f* (N=151)	Normal BMI (N=33)	Overweight BMI (N=118)
Pant Crotch, Seat, Hip Fit	60	13	47
Shirt Proportion and Fit	41	7	34
Pant Waist Fit	26	5	21
Pant Leg Fit	24	8	16

Note. The number of men in each group is as follows: normal height group = 5; overweight BMI group = 16.

Length. Both normal and overweight BMI categories spoke about length and the

following sub-themes emerged from their discussion: sleeve length; body length; and pant leg

length. The overweight BMI category had more issues with sleeve length (49) and body length

(35). The overweight men stated that when they move their arms, the sleeves ride up their arms

and become uncomfortable.

> "Yeah, I think that's something else that you should consider. When you wear something
> you're not always just sitting in one position. And like I said, with the long sleeve shirts,
> and I wear more long sleeve shirts than I do short sleeve shirts. When you reach for

something you don't want it to pull (points to area just below his elbow)." (Overweight BMI Male)

The men wanted their sleeve cuffs to end at their wrist and stay at their wrists. Often the shirt sleeves would be too short while the rest of the shirt fit them correctly. If the men went up in a size to obtain correct length, the rest of the shirt would be too large. The following statements represent sleeve length preference and issues of men:

"The arms… Yeah, the arms and the legs for me. I mean, I can usually find the waist, but its… length." (Normal BMI Male)

"I go for 2X just for that extra easement, and they do have that extra sleeve. Really a 2X will come to here (points to wrist area), while a regular will be even shorter (points to forearm area)." (Overweight BMI Male)

"...Yeah, I'm like super tall and super thin, so it's like everything… it's always like the sleeves… like longer sleeves will be better. So it's like even by dress shirts or something like that, the sleeves are always too short." (Normal BMI Male)

In the context of shirt body length, overweight men were frustrated with their shirts not staying tucked into their pants. The men preferred the shirt fronts and backs to be longer. They liked shirts that had longer tails so that when they bent over or squatted, the shirt tail would stay in place. Additionally, one man stated that spacing and placement of the buttons on a button shirt was often incorrect and his shirt would come open and 'un-tucked'. The following quotes illustrate these length preferences:

"I don't like it when every time you sit down your shirt is coming out in the back. I like mine, I like to be able to move."(Overweight BMI Male)

"Cause when you do this (lifts his hands all the way up) they just kind of un-tuck". (Overweight BMI Male)

"Well I don't know if you meant that there are tall sizes, but I often buy tall sizes. For no other reason than it tucks in, and it stays in. Not that I'm incredibly tall.... But in my torso, tall sizes are important." (Overweight BMI Male)

"I feel like they don't go far enough. Because you always get that last button, and it doesn't go far enough down, so it'll you know, just split when you tuck in." (Overweight BMI Male)

"The Carhartt and the Duluth have the long tails. Two or three extra inches each. You don't have the ride up. You bend over when you're working and the shirt tail doesn't come out. Your t-shirt it stays tucked in." (Overweight BMI Male)

Pant leg length was mentioned less often than length issues in upper body clothing. Most pant lengths can be altered but if the pant has a hem with Velcro or zippers at the bottom for adjustability, it can be difficult to alter and thus the length needs attention at the time of purchase. One overweight male made the following comment about finding the right length in his pants:

"I'm full bodied so I've got a large waist but I also have a short instep. And, to buy my length and my waist size, I really have to go down an inch to be able to find enough quantity...." (Overweight BMI Male)

Table 14

Frequency Counts for Length by BMI Groups

Sub-themes	*f* (N=93)	Normal BMI (N=20)	Overweight BMI (N=73)
Sleeve Length	49	7	42
Body Length	35	9	26
Leg Length	9	4	5

Note. The number of men in each group is as follows: normal height group = 5; overweight BMI group = 16.

Sizing. The overweight BMI group discussed issues and preferences related to sizing more than the normal BMI group. The following sub-themes emerged from the discussion on sizing: inconsistent across brands; inconsistent within a brand; and 'Big and Tall' sizing. The overweight BMI group shared their frustrations with the inconsistency of sizing 'across brands' and 'within a single brand'. The normal BMI group did not discuss inconsistent sizing issues and

often had no comment on the topic. The overweight men voiced that across outdoor

performance brands, there is little consistency in sizing. One man commented:

> "I think the frustrating thing that has me, are just the way they size things. When you're
> just going with general sizing. I can't even wear polo s anymore. I am not a large guy. It
> didn't used to be that way. I mean I've gotten somewhat bigger, but they've changed the
> sizes I think." (Overweight BMI Male).

The overweight men felt that they did not wear the same sizes across brands. They also

said that some brands do not fit them at all because of lack of sizing consistency. The following

are statements concerning incorrect fit due to inconsistencies across brands and incorrect sizing:

> "My biggest complaint with that would be is for, and I know that you're involved in this
> and you know it seems like to me there is not a standard of the way they fit clothes. You
> can walk into a store and buy four pairs of 38x32's and you take em home and two of
> them are not gonna fit you. If you don't try them on in the store, and it seems like to
> me… if it's just the sewing or if it's in the way they are made…" (Overweight BMI
> Male).

> "Across brands I feel like it's different. Brand to brand…." (Overweight BMI Male)

Also, the overweight men shared frustrations with sizing inconsistencies within the same

brand. The men stated that once they found a style or brand they liked, they would buy multiple

shirts and pants of the same style. Despite this, the same styles did not fit the same. Some would

fit perfectly, while others were too tight in areas. The following statements reflect sizing

inconsistencies within the same brand:

> "Right, I've got a pair, actually I've got two pair of mountain khakis and they're the exact
> same size, but I can't wear one of them. One of them is tighter than the other and they
> just don't fit right." (Overweight BMI Male)

> "Yeah I don't know. I'm talking about you can go buy four pair of Carhartt pants out of
> the same stack seems like to me they are not consistent with that. I don't like to try on
> clothes when I'm shopping, it's just something I don't like to do. I just like to go in and
> get what size I wear and go home. But when you get home you gotta turn around and take
> half of em back because either they won't fit and it seems like it's not just a tad. You can
> have one pair that fits you perfect and then the other one I will [have] like that much

(holds up fingers approx. 2 inches apart) or even more so it's a long way off."
(Overweight BMI Male)

"Like Columbia shirts, I feel like their shirts run big but their pants run small. In mountain khakis—in different styles that they have in the khakis—it's a different size in the waist. Like I can wear two different types of their khakis, but they have to be two different sizes for them to fit right." (Overweight BMI Male)

The men often stated their frustrations with 'Big and Tall' sizes. The men desired longer lengths or tall sizes without the added circumference measurement. One Normal BMI man commented:

"If we could get like…You could get like a medium with long sleeves. Or long with XL sleeves." (Normal BMI Male)

Table 15

Frequency Counts for Sizing by BMI Groups

Sub-themes	*f* (N=64)	Normal BMI (N=5)	Overweight BMI (N=58)
Inconsistent Across Brands	38	1	37
Inconsistent Within A Brand	11	0	11
Big And Tall Sizing	11	4	7

Note. The number of men in each group is as follows: normal height group = 5; overweight BMI group = 16.

Height and men's fit preferences in outdoor performance clothing

Self-reported height was obtained from the questionnaire completed during the focus groups. The qualitative data from the participants were categorized into three groups (short, regular and tall) to examine the relationship between height and fit preferences. The three groups were created based on sizing charts of men's outdoor and performance apparel (see Table 4). A total of two participants were considered short, five were considered regular height, and fourteen were considered tall.

Fit. Of the three height groups, the tall group spoke about fit the most. The short height group was a small group compared to the regular and tall height groups and did not comment on fit often. They generally agreed with comments relating to pant waist fit, or shirt chest, arm, and back fit. The Tall group discussed all emergent sub-themes (pant crotch, seat and hip fit, shirt proportion and fit, pant waist fit, and pant leg fit) more than the other two height groups. The tall men mostly emphasized the length of the sleeves, body, and pant legs in their comments. They also discussed other fit issues for outdoor performance apparel except in context to length. They needed clothing that would not restrict them when they moved and performed their outdoor activities. The following statements reflect length and fit interactions:

> "Yeah, I just—the only thing I really look for in the fit is that it's not restrictive. Cause you're moving around so much, you don't want something you can't squat down in, you can't bend over. Like you know, you're pants are coming off when you bend over or something like that. Shirt pulls up when it's too short in the back." (Tall Male)

> "Yeah, ugh. That's the thing with me… It feels like with the shirts: it might fit up here [chest, shoulders], but its not gonna be long enough [arms]. Or its long enough [length], but its kind of dragging up here [chest]. That's us—tall people. We have a rough time shopping." (Tall Male)

The men discussed pant hip and seat fit when they were squatting or performing specific tasks. The men needed pants that fit, but also gave enough room for movement. As one regular height male stated and the rest of the group agreed, "I mean if it's too tight, you can't bend." The pant hip and seat fit was seen to be influenced by men's height. One participant felt that the pants were not designed for a taller man with different proportions and thus improper fit occurred. When the participant was asked if the pant fit was improper, a regular height male responded, "Oh yeah for a guy like me with my build. Yeah I should be six foot five, but I am not… I'm five foot ten."

Shirt fit was discussed more often than the proportion of the shirts in relation to height. One short man stated: "To me, button-up shirts, the chest always seems too big. It's too baggy..."

Another tall male stated that the width of the back was affected by the sleeve length and fit:

"… the problem with that is if I don't have it long enough on the sleeves, whatever I try to do like this [moving arms in front of body], it becomes real tight on the back and the sleeves ride up too. So I need more length." (Tall Male)

Though neck fit was not discussed often, one man commented on the neck and sleeve fit of his button shirts: "The sleeves. Sometimes the neck, it's too small. I mean, you don't usually button up a neck on those, but like non-PFGs, like a regular shirt—if you try to button it up—uh uh." (Tall Male)

Analysis of pant waist fit revealed that height and waist fit issues were related. When questioned about waist fit, the men would include pant length issues. For example: Moderator: "Ok. So once you get the fit right in the waist, it's hard to find the length." "Yeah. For me it is." (Tall Male). Other men expressed their desire for an adjustable waistband or a waistband with stretch:

Moderator: "You want adjustable waist band?" "Yes, yeah, right, correct." (entire group)

"The elastic with like a button. I still like it with just kind of a hard fasten and not just be just elastic." (Regular Height Male)

"Also if it has the little tension thing on the waistband. In case I throw it on over jeans or something or I don't. Just adjusts for the waist." (Short Height Male)

Issues of pant leg fit arose when men repeatedly stated that they wanted a fitted pant leg that was neither too tight nor too loose. When asked further, they remained very general in their pant leg fit preferences. For example, one tall male commented: "Levi's I'll wear cause they are a little bit tighter, and that's alright. I just don't want like restriction. I don't want to wear skinny jeans is a good way to put it."

Table 16

Frequency Counts for Fit by Height Groups

Sub-themes	f (N=151)	Short Height (N=13)	Regular Height (N=33)	Tall Height (N=105)
Pant Crotch, Seat, Hip Fit	60	6	13	41
Shirt Proportion and Fit	41	5	10	26
Pant Waist Fit	26	1	6	19
Pant Leg Fit	24	1	4	19

Note. The number of men in each group is as follows: short height group =2; regular height group = 5; tall height group = 14.

Length. As one would expect, the tall height group discussed length issues the most of the three height groups. Their elongated body measurements necessitate more length in their clothes to cover their bodies. However all three height groups made comments about sleeve lengths of their shirts. One male in the short group stated frustration with sleeve length: "Well you have to go to a bigger size just so you can (extend your arms)."

The tall and the regular height groups agreed that they would like longer sleeves available for shirts as a whole. They often could not find longer lengths for specific types of shirts, such as performance t-shirts. The following comments are related to shirt sleeve length:

"You know, make it longer than your standard sleeve." (Tall Male)

"The sleeves should be, maybe add an inch or so into the standard measurement. I think it would be better." (Regular Height Male)

""Moderator: Ok. So length is a big issue?" "Especially in those. Talls are very hard to find in those sort of quick dry, workout kind of things." (Tall Male)

Body length was discussed often by the regular and tall height groups. Most often the comments related to jacket body length. The men agreed that having a longer jacket was better. Some of the men preferred parkas over jackets for the added length. Some jackets were too short in the body and thus were uncomfortable or did not serve their purpose. The men stated that they

liked long rain jackets because they kept them drier. They preferred jackets that were longer in the body and the sleeves to cover the other layers on the body. The following comments reflect these length preferences:

> "They do, actually. And again, I will generally buy a parka rather than a jacket for that exact reason. A parka is long enough. Jackets tend to always, even the tall jacket is still not really long enough." (Tall Male)

> "This rain jacket (pointing to his jacket on the chair)....And it comes down lower than my rear end. I like it longer if it is either a windbreaker or a rain jacket because I don't have to carry an umbrella." (Regular Height Male)

> "So I found—like you were talking about brands earlier— Arcteryx, they do like a lot longer sleeves. So when I was buying a rain jacket that was the reason I bought that one. Because, you know, it didn't ride up on the sleeves." (Tall Male)

Pant leg length issues were mostly mentioned by tall men. They stated frustrations with pant leg length when they were active and working. The shortness of the pant leg was noticeable in the colder weather because their ankles would become cold. As one man states:

> "I hate when I'm getting in my truck or my tree stand and my pants go above...when I sit down, they go above my boots. The bottom comes up. You catch a breeze on your ankle." (Tall Male)

Another issue in pant leg length was that some tall men prefer to wear their pants a little higher on their waist:

> "Sometimes I find it hard to find the length I need. [I'm] pretty tall. So I actually like it to sit higher than my hipbone. Like, I don't really care how it looks, probably a little funny, but I like it to sit as high as it can. But then the length becomes an issue." (Tall Male)

Table 17

Frequency Counts for Length by Height Groups

Sub-themes	*f* (N=93)	Short Height (N=5)	Regular Height (N=26)	Tall Height (N=62)
Sleeve Length	49	2	18	29
Body Length	35	2	8	25
Leg Length	9	1	0	8

Note. The number of men in each group is as follows: short height group =2; regular height group = 5; tall height group = 14.

Sizing. Sizing emerged as an important theme in relation to men's height. Men repeatedly discussed issues with 'Big and Tall' sizes and the need for additional length sizes for better fit. The tall height group discussed their frustration with sizing the most. They wanted more clothing offered in longer lengths. The men did not need bigger sizes, rather they need extra length in the sleeves and body. The men were not happy with 'Big and Tall' sizes because they were too large and often too baggy. Many men commented on the fact that they needed a tall section without any added circumference width. One man stated:

> [Moderator: And you know they have Big and Tall sizes they do adjust for the long and extra long] "They always seem to go extreme with that though." (Tall Male)

Many brands do not offer tall for outdoor performance clothing. One participant commented that Nike and Under Armour do not offer tall sizes for their regular letter sizing. Another man discussed frustration with 'Big and Tall' sizes in business clothing that is applicable to outdoor performance apparel:

> "Yeah that's more like the designer clothing, the Big and Tall stuff. But then it always seems like way over what they need them to do. It's kind of like, I wear a large, and then it's like ok I need a large tall so that I can tuck it into some dress pants. And then it's down to my knees." (Tall Male)

One taller male stated his frustration with finding outdoor performance apparel in his size:

"I actually think a number system would be pretty awesome on like upper clothing too. Just because of my height… waist… can't ever seem like…. I always order dress shirts from LL Bean because you can pretty much custom-design the shirt. You know, how long you want the arms, how long you want the waist and everything…" (Tall Male)

Inconsistent sizing across brands was an issue that arose for all three height groups. One tall man commented:

"I've found with pants, going back to the company that makes them, the companies don't size right. A 36x34 in like Wrangler compared to 36x34 in Faded Glory there is about a two to three inch difference. I can't wear one in that size, I have to go two sizes higher to be able to wear it." (Tall Male)

The short group did not discuss inconsistent sizing within a brand. Additionally, no qualitative differences were seen between the regular and tall height groups. A few comments were made about inconsistencies in sizing within brands; however they have been reported in context with other research questions.

Table 18

Frequency Counts for Sizing by Height Groups

Sub-themes	*f* (N=64)	Short Height (N=3)	Regular Height (N=24)	Tall Height (N=36)
Inconsistent Sizing Across Brands	38	3	14	21
Inconsistent Sizing Within A Brand	11	0	6	5
Big And Tall Sizing	11	0	2	9

Note. The number of men in each group is as follows: short height group =2; regular height group = 5; tall height group = 14.

Age and men's fit preferences in outdoor performance clothing

Men were categorized into two groups, younger and older, based on their self-reported age in the questionnaire. The younger group was between the ages 20-50 and consisted of 14 participants. The older age group included men 50 and older and consisted of seven participants. When the men were asked directly if their preferences in fit or style of their clothing had

changed over the years, the men had difficulty answering. The men made comments such as, "No, I hadn't ever really thought about that". The majority of the younger age group said that they had not changed their preferences in the fit of clothing. Changes had occurred for men as they aged, but they were rarely in reference to clothing fit:

> "I've basically worn the same fit. And I think on the average… you gonna wear the same fit simply because it fits, and it's comfortable to you..." (Older Male)

> "I pretty much wore the same things growing up. I guess the only thing is newer materials. That is the only thing that maybe changes stuff." (Younger Male)

The younger and older men did say that their fabric and material choices had changed. Also, the way in which they dressed for activities, the brands they liked and the amount they are able to spend had changed. One older man stated:

> "I used to but a lot of wool stuff. I found out that I can probably be better in the winter time to buy layering with the fleece and some kind of lighter water proof outer shell. It actually performs better than the wool does." (Older Male)

Fit. Although the men did not report age-related changes in fit preferences, fit was an important theme for both younger and older participants. Pant crotch, seat, and hip fit, was frequently discussed by both younger and older age groups. All ages agreed that adding an insert in the crotch area would assist in better pant fit. One younger man commented:

> "I bought some of those mountain khaki's I was telling you about, and I had one pair that fit really well and I love them. And then the other pair do not fit cause they were just too tight in the crotch. But then I've noticed they have a gusset that they've started making in those. Which is great because it gives you more room." (Younger Male)

The men were concerned about comfort and restriction in their pant fit when performing activities. When the group was discussing the "U" vs. the "V" crotch seam for men's pants, one of the older men stated that "And it makes all the difference in the world in how the pants fit and work."

The younger age group discussed more about pant leg fit than the older group. The men preferred pants that were fitted to their legs, but nothing restricting or too baggy where it would get in their way. The men did not express any fitting issues, only that pant legs should be loose enough to move and bend. An older man stated: "I don't want no skinny jeans, but I don't want no flare leg boot jeans either. With the bell bottoms and all." (Older Male)

As mentioned previously, for pant waist fit, men discussed wanting more adjustments at their waist for more function, comfort and ultimately better fit. The younger men were a larger group and they discussed the waist adjustability more. They liked having a button or snap closure in the front, but also found it important to have stretch in the waistband. The stretch in the waistband would enable them to layer their pants, tuck their shirts in, and fit their stomachs more comfortably. One man stated that for outdoor activities, he preferred work pants and shorts with a stretch strap inside the waistband with an adjustable clasp. Another young man commented on waist adjustment:

> "All of the pants I go for usually have like a nylon strap clasp, and so there is a full kind of size range that you can go from with the adjustment. Especially when you're like backpacking or paddling that is just one of the things that I always look for." [Moderator: So you adjust the waist size.] "Yeah, so you can adjust the waist size it also means that it's easy so I usually look for brands that have something like that..." (Younger Male)

The two groups equally spoke about shirt proportion. If the shirt fit in one area of the upper body, it did not fit in other areas of the body. The fitting issues became more apparent when the men were performing their outdoor activities. One younger man stated, "And that's what I've found, is that to get something that fits your arms, especially like in golf and after you play your golf it's all tight like right in here (motions to outer chest and underarm areas). Then it's loose and bulky here (motions to inner chest and pectoral regions) because you have to go up a size to get that fit." The whole group both younger and older men agreed with this statement. There was not enough fabric across the top of shirt to correctly cover the chest when moving:

"Well I think, especially on polo shirts, there just not, not, I mean I'm broad in the shoulders. You know you try to button it up and it's got one button there, it's like pulled tight. But if you undo it, it's like all my chest hair is out." (Younger Male)

Shirt back fit was discussed to a small extent. When discussing shirt fit, an older man in the group stated twice that the shirts were too tight in the back: "Right, it's too tight. It's too tight in the back. Yeah." (Older Man) When asked about the back tightness, the man just restated that his shirts can be tight in the back area: "Right it's tight in the back."

Table 19

Frequency Counts for Fit by Age Groups

Sub-themes	*f* (N=151)	Younger Age (N=89)	Older Age (N=62)
Pant Crotch, Seat, Hip Fit	60	33	27
Shirt Proportion and Fit	41	21	20
Pant Waist Fit	26	18	8
Pant Leg Fit	24	17	7

Note. The number of men in each group is as follows: younger age group =14; older age group = 7.

Length. No qualitative differences were voiced between the older and younger age groups for the length sub-themes. Both age groups spoke about sleeve length preferences and issues as seen in the example:

"Moderator: So in the regular sizes you're having trouble with the length in the sleeves? (Group says yeah, nodding heads yes) ."

For leg length, the younger men voiced more opinions of pant leg length and preferred long leg lengths.

"Long enough arms and long enough pants." (Younger Male)

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"Length, again, the longer it is the better. Obviously I wouldn't get like really long pants, but they usually tend to be shorter. And then adjustment down at the bottom." (Younger Male)

For body length, the younger men preferred for their shirts to stayed tucked into their pants when they move their arms. Two younger men stated:

"Cause when you do this (lifts his hands all the way up) they just kind of un-tuck." (Younger Male)

"Mmm-hmm… and like in the shirts [length of torso] they'll start riding up." (Younger Male)

Table 20

Frequency Counts for Length by Age Groups

Sub-themes	f (N=93)	Younger Age (N=59)	Older Age (N=34)
Sleeve Length	49	25	24
Body Length	35	25	10
Leg Length	9	9	0

Note. The number of men in each group is as follows: younger age group =14; older age group = 7.

Sizing. Slight differences between groups were seen for inconsistent sizing across brands and within a single brand (see Table 20). For inconsistent sizing across brands, the younger and older men made similar comments:

"I would say that they are not all consistent. Some brands an extra-large may be big enough in some brands. Some it takes a double X to be the same size." (Older Male)

The younger age group discussed 'Big and Tall' sizing while the older group did not discuss the sub-theme at all. The younger men liked the tall sizes, but did not comment much on the "Big" side of the sizing. One young man stated:

"Well I don't know if you meant that there are tall sizes, but I often buy tall sizes. For no other reason than it tucks in, and it stays in. Not that I'm incredibly tall, especially in my torso, but yeah definitely in my legs. That's another story. But in my torso, tall sizes are important." (Younger Male)

Table 21

Frequency Counts for Sizing by Age Groups

Sub-themes	*f* (N=60)	Younger Age (N=38)	Older Age (N=24)
Inconsistent Sizing Across A Brand	38	22	16
Inconsistent Sizing Within A Brand	11	3	8
Big And Tall Issues	11	11	0

Note. The number of men in each group is as follows: younger age group =14; older age group = 7.

V. DISCUSSION AND IMPLICATIONS

This chapter first discusses the results of study 1 by reviewing the relationship of the body areas shape variables with each of the independent variables: BMI, height, and age. This is followed by a discussion of the results of the focus group interviews from study 2, which examined men's fit preferences in outdoor performance clothing.

Study 1

The goal of study 1 was to examine the relationships between body area shapes of men and BMI, height, and age using secondary data from the SizeUSA (2004) study. Results showed that specific body area shapes of men differ by BMI, height, and age. The following sections discuss the results and conclusions of each research question.

BMI and Men's Body Area Shapes

Research question 1 aimed to examine the relationship between BMI and the eight body area shape variables. Results revealed that the following seven of the eight body area shapes differed by BMI: erect posture, flat seat, prominent seat, bow legs, prominent calf, abdomen prominence (portly), and prominent bicep. Limited literature has been published in relation to men's erect and stooped posture and BMI. The present study found that the overweight and obese BMI categories showed a higher occurrence of erect posture than the underweight and normal BMI categories. Schafer (1987) stated that fat accumulation can alter one's center of gravity and posture. Additionally, being structurally imbalanced (too small in certain areas) can alter the center of gravity, thus affecting the posture. One can speculate that with a larger body and higher BMI, the additional weight at the midsection would limit the degree to which a man could be stooped forward in posture, thus identifying him with erect posture. General pattern-

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making processes would accommodate for these occurrences. However,stooped posture was not found to differ with BMI. All four BMI categories showed occurrences of 15-18% for stooped posture. There was not much variation seen and the percentages were relatively low, thus these results suggest that there is not a compelling reason to focus on stooped posture for apparel fit.

This study found that the underweight and normal BMI categories showed more occurrences of bow legs compared to the overweight and obese categories. These results differ with others who state that bow legs occur more in adults when they are severely overweight and obese (Arima, 2001; Teague, 2007). As additional weight is put on, pressure is placed on the bones in the legs, thus increasing the chance of bow legs (Teague, 2007). A reason for the contradicting results may be because this study did not analyze the degree of bow legs, rather if the man had bow legs or not. The occurrence of bow legs in the SizeUSA (2004) study, was determined from the results of the body scans. It may have been easier for the scanner to differentiate the curvature of the legs in a thinner than overweight or obese man. It should be stated that how the bow legs were operationally defined were not included in the SizeUSA (2004) report and could affect the validity of these results.

The flat seat occurred more for the overweight and obese categories. Overweight and obese BMI categories have a greater accumulation of fat and body mass than the normal and underweight categories (CDC, 2010). The weight of the excess mass overcomes the elasticity of the skin (Rueda, Rebane, & Thaller, 2012) and creates a thick barrier over the contoured muscle. These findings are congruent with Thibodeau and Anthony's (1990)study who found that men accumulate fat at their hips, abdomen and buttocks.Genetics could also contribute to the occurrence of prominence. Though the seat may be flatter from the side view, the seat may be wider across the hips for the overweight and obese categories, thus creating problems for clothing fit. For the normal and underweight categories, the width is not an issue, but rather the

seat prominence from the side view occurs more. The normal and underweight categories showed the highest occurrence of prominent seat. The bodies of the normal and underweight men are more proportional and thus the curvature of the seat was more apparent. Fu (2004) studied overweight and obese women and found that women had fit problems in relation to their prominent buttocks. Thus the prominent and flat seats for different BMI categories should receive attention in clothing and pattern design. Specifically, less depth could be added to the crotch /seat for the larger sizes for men's pants. However, the width at the hip may need to be proportionally greater for the increasing BMI. The sizes of pants for the normal and underweight men may need more room in the crotch depth measurement to account for the prominence. .

According to Fredrick and Peplau's (2007) male body scale, the calf and bicep prominence increased as the body increased in both muscle and fat. Conversely, for the present study, the calf prominence occurred for the underweight and normal BMI categories, while the bicep prominence occurred more for the overweight and obese categories. This study speculates that the calf prominence was more visible for the underweight and normal BMI categories because their legs may be more toned. The bicep prominence is more apparent in the overweight and obese categories because they have acquired more body mass and possibly more muscle at the bicep. One limitation of BMI is that it does not differentiate between muscle and body fat and the distribution of muscle and bone mass (Body mass index (BMI), 2013). These results may further suggest that clothing pattern design needs to address fat and muscle increases in the arms and legs of men. For looser dress pants, pattern changes may not be necessary, but changes may need to be made for pants that are more fitted, particularly those targeted to lower BMI men (smaller sizes). Change may also be needed for upper body clothing for higher BMI men (larger sizes) to allow for more ease around the bicep, shoulders and armholes.

Abdomen prominence occurrence was seen to increase considerably for the overweight and especially for the obese BMI categories. This is supported by previous research stating that fat accumulates in the abdomen for men (Bird, 2006; Thibodeau & Anthony, 1990). Chattaraman et al.'s (2013) study found that higher BMI men preferred dress and polo shirts with looser fits, indicative of the need for greater ease in the body and waist of these apparel. Hence, there is a need for expansion in the waist and hip circumference measurements in shirts and pants for larger sizes (higher BMIs). Men's bodies in the UStoday are larger and fat is accumulating in the abdomen. It is suggested that the sizing and grading of clothing be re-examined for the larger male consumer. Increases in grading should be made in the waist, hip and armhole circumference for larger male consumers; however crotch depth/seat length may need to be reduced.

Height and Men's Body Area Shapes

Research question 2 examined whether or not a relationship existed between men's height and the eight body area shape variables. Results revealed that the following four of the eight body area shapes differed by height: erect posture, stopped posture, prominent seat, and prominent bicep. The present study found that the short height category showed higher occurrences of erect posture and the tall height category showed higher occurrences of stooped posture. Schafer (1987) felt that shorter people will attempt to keep erect posture to appear taller and thinner, while tall people will slouch more to be closer to the average height. These results could be applicable to clothing design and pattern making. Clothing could be more distinctly designed and offered for shorter men similar to the petite offering for shorter women. For the taller category, more length could be applied to the back of clothing and not to the front (e.g., longer shirt tails) based on their posture.

Slight differences were seen across the three height categories in relation to seat prominence and bicep prominence. The tallcategories had higher occurrences of seat and bicep

prominence. This could be applicable to sizing and fit for clothing offered in tall sizes. Apparel offered in longer lengths could also incorporate more ease around the fullest area of the buttocks for the seat prominence, greater crotch depth for better movement in the stride, and greater sleeve circumference for the bicep prominence.

Age and Men's Body Area Shapes

Research question 3 examined the relationship between age and the eight body area shape variables. Results revealed that the following seven of the eight body area shapes differed by age: erect posture, stooped posture, flat seat, prominent seat, prominent calf, abdomen prominence (portly), and prominent bicep. The eight body area shapes in relation to age will be discussed together.

Abdomen prominence (portly) increased from 8% (18-25 age group) to 50% for men 56 years old and older. This supported results by Hogge et al. (1988) who found that as men age, fat easily accumulates in the abdomen easily. More recently, Poehlman et al. (1995) found that the abdominal circumference annually increases 0.18 cm for men. These consistent results from the aforementioned studies suggest that older men need more attention in clothing fit at the waist. Creating more stretch and adjustability to the waist of pants for older men could be a solution to the change in body composition and shape.

The present study found that the age groups 56-65 and 66+ had the highest percentages of stooped posture (29%), while the younger age groups (26-35 and 36-45) had the highest occurrence of erect posture (38% and 40%). The youngest age group (18-25) had a higher occurrence of stooped posture (19%) than those 26-45, which may be explained by younger men placing strain on their backs and necks for extended periods of time. A posture clinic stated that young people ages 18-25 are the fastest growing back and neck strain patients because of their neglect for correct posture (The Importance of Posture, 2013). These results show the occurrence

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of poor posture in men of multiple age groups. Hogge et al. (1988) also found results relating to

men's posture. The researchers found that older men needed more fabric across their upper back

because they had a higher occurrence of sloped shoulders and stooped posture. The posture of

male consumers has not been examined closely for apparel and would warrant attention for

pattern design. Pattern design could incorporate more ease in the back and shoulder areas or the

shoulder seams could be moved to the back to accommodate for the posture change

Younger age groups showed a higher occurrence of bicep prominence and calf

prominence (16%). The bicep prominence decreased for men ages 56 and older (11%). The calf

prominence occurred most frequently in the youngest age group (18-25); however a slight

increase was observed in the 56-65 age group (11%). The slight increase for the 56-65 age group

is contrary to Schwartz et al. (1990) study that found as men age, the fat shifts from the arms and

legs towards the core of the body and prominence was not often seen in the arms and legs as men

age.

The present study found that the occurrence of fullness in the seat decreased as men aged.

The younger age groups had higher percentages of prominent seat, while the older age groups

had higher percentages of flat seats. As men age, muscle definition decreases and fat increases in

the trunk regions of the male body. Chumlea, Roche, Webb (1984) found that subcutaneous and

internal adipose tissues on the trunk were greater with age and attributed in muscle tone. Schewe

(1988) also reported with older consumers muscle mass decrease and percent fat increased with

age. The seat of the human body is made of three muscles (gluteus maximus, gluteus minimus,

and gluteus medius) (Dolgoff, 2013)**.** With a decrease in muscle, it is projected that the

prominence in the seat would decrease as well. Goldsberry, Schim, and Rich (1996a) found that

as women age, their buttocks get lower and flatten. Woodson and Horridge (1986) reported that

older men felt that clothing was created for a younger male body and did not accommodate for

the increases and decreases of the older male body. The older male body increases in fat in the abdomen and back areas and decreases in mass in the legs, arms and buttocks (Hogge et al, 1988). These findings coupled with the present findings confirm changes in the male body as it ages. Muscle tone, fat distribution, and posture could affect the fit of clothing for men in the seat or buttocks. All of the above studies suggest that seat shape could be a significant fit issue for pants for older men. For clothing design and pattern making, reduced ease in the seat area is important, while greater ease should be incorporated into the abdomen and back areas for better fit for older men

BMI, height, shape, overall body size, muscle mass, and fat mass all work together to create a clearer picture of the human body for better apparel fit. These results show how important it is to study the body area shapes of individual target markets by BMI, height and age in order to create appropriate patterns, sizing and grading. Since the U.S. male body has been changing in the last decades, there is a significant need for more customization. This study can help industry professionals see the complexity of clothing fit for the U.S. male body. The results demonstrate that men not only have different shapes, like women, but also have different body area shapes that can affect clothing fit. Considering these body area shapes in relation to BMI, height, and age could improve the fit of men's clothing through the evaluation of sizing and grading of patterns.

Study 2

The goal of study 2 was to understand men's fit preferences for outdoor performance clothing in relation to their BMI, height, and age through the use of four focus group interviews and a questionnaire. For this study, BMI was condensed into two groups (normal and overweight); height was categorized into three groups (short, regular, and tall); and age was divided into two groups (18-50; 50-over). As a reminder, when discussing age results below, the

younger age group was very broad and ranged from 18 to 49 years of age. Additionally, because of the small sample, the groups were uneven in number and the reader should keep this in mind when reviewing the results and discussion. Additionally, the reader should be aware that as questions asked about fit preferences however men had difficulty in verbalizing their preferences and found it easier to discuss issues and problems of fit. Also, the men could also have been thinking of clothing types other than outdoor performance clothing if a type was not specifically mentioned. The following sections discuss the emergent themes and sub-themes of fit, length, and sizing in relation to the three variables (BMI, height, and age), existing literature, and study 1 findings, and generate specific implications for outdoor performance clothing development.

Fit Preferences Influenced by BMI, Height, and Age

The results showed that men have many preferences and issues with outdoor performance clothing fit. Younger, overweight, and tall men most often voiced their preferences and issues concerning fit of outdoor performance apparel. The preferences and issues with fit related to pant crotch, hip and seat fit, shirt proportion and fit, pant waist fit, and pant leg fit. These sub-themes of fit will be discussed in relation to BMI, height, and age.

The overweight BMI group, tall height group, and younger age group discussed pant crotch, hip, and seat fit the most with pant crotch fit to be the most frustrating. They frequently noticed the ill-fitting crotch area when performing their outdoor activities. Sindicich and Black (2011) found correlation between crotch fit and inseam length, thus concluding that the tall men needed long crotch lengths, while the short men needed no change in the current crotch lengths. In the present study, the tall group discussed preferences for better crotch fit than the other groups and thus conforming to Sindicich and Black's (2011) suggestions. In women's research, LaBat and DeLong (1990) and Campbell and Horne (2001) found that women were also dissatisfied with their pant fit, especially in the crotch area. Campbell and Horne (2001)

recommended including abdominal extension measurements and reducing pleats around the front of the pants for better fit. These recommendations could be applied to men's pant fit by extending the rise of the pants.

In order to achieve maximum comfort and increased mobility, the men in the present study desired better crotch fit and suggested a gusset or crotch diamond insert in the crotch area. Additionally, seams that attach the crotch diamond to the pant legs were a comfort issue. The men saw a need for an improvement in seam type in order to prevent chaffing. The crotch is very complicated for seasoned pattern makers because it includes the rise (length from the waist to crotch), crotch depth, crotch length, and crotch width. The suggestions that the men made could be because they do not understand the complexity of pattern making. Hence the readers need to be made aware that the terms made by the men may not accurately reflect the complexity of pattern-making.

In addition to crotch fit, the hip and seat area were problematic when the men were sitting or frequently squatting. The men wanted enough room across their seat and hips without any tightness. In the present study, the overweight BMI group discussed this issue the most. Chattaraman et al. (2013) found that larger men (higher BMI's) preferred looser fitting jeans. Study 1 results show that the overweight and obese groups had a higher occurrence of flat seat while the lower BMI groups had a higher occurrence of prominent seats, both of which could affect the circumferential fit of the pants.

Furthermore, the tall and younger men in study 2 preferred looser fit when discussing fit issues with the hip and seat area. For study 1, the flat seat did not differ by height, but prominent seat did differ by height; the tall group having the highest occurrences. For age in study 1, the younger men had higher occurrences of prominent seat. These findings could explain why the taller and younger men of study 2 discussed looser fit across the hip and seat areas. In order to

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prevent possible hip and seat tightness, two possible solutions are to (1) insert stretch material at the side seams of the pants and to (2) improve the grading by adding slightly more room at the hip circumference for larger sizes.

For pant waist fit, men preferred stretch in the form of elastic or adjustability in the center front closure. The overweight BMI group discussed preferences for pant waist adjustability and stretch the most. Study 1 found that overweight and obese men had the highest occurrence of abdomen prominence. The increase in prominence in the abdomen could require more stretch in the waist for a more comfortable fit. Also, the waist fit and pant leg length were found to be themes mentioned by the tall height group. The taller younger men had issues finding correct fit for the waist and the pant leg length. Similarly, Sindicich and Black (2011) found a negative correlation between waist size and pant leg length. Thus incorporating adjustability and stretch to the waist band of pants could increase the range of fit at the waist so the correct length can be found more easily.

Pant leg fit (circumferential measurement of the leg to the thigh to the ankle) was yet another important fit topic for the overweight BMI group, tall height group, and younger age group. Conversely in study 2, bow legs and prominent calves were seen to be more evident in lower BMI categories. Prominent calves occurred more in younger men and thus may be a reason for looser pant leg preferences of younger men in study 2. Though there is limited literature on men's pant leg fit, Chattaraman et al. (2013) concluded that the preference for looser jean fit increased with BMI. Boyce (1984) studied truck driver pant fit and found that when the men are seated, their pants crease and place added pressure on lateral femoral cutaneous nerve in the leg, which creates discomfort. One company (truckerjeans.com) interested in truck drivers' clothing comfort, designed a jean pant with more spandex for greater comfort during the long driving hours. The drivers who wore the new jean pant design with

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added spandex found their symptoms to subside (Boyce, 1984; New jeans for truckers designed

for long hauls, 1983). Feather, Ford, and Herr (1996) studied female athletes and found that

baggy shorts were more preferred for sports by females with larger body sizes. The present study

expands on the previous findings by discovering that men desired looser fitting pant legs that

enable them to squat and bend their legs more comfortably. The use of the words "restricting" or

"restricted" was evident when the men discussed pant leg fit. They stated that they liked stretch

around the thigh and knee for a better fit and range of motion. Using materials with more stretch

around the thigh and knee may make pants more comfortable and less restricting for outdoor

activities. Incorporating pleats or gussets around the knee area could also provide extra room for

bending and squatting, an important need for outdoor activities as discussed by the men.

Shirt proportion and fit was the second most prominent sub-theme of fit. The higher BMI

group voiced opinions about shirt proportion and fit, wanting their outdoor performance shirts to

be looser and longer, yet not baggy, to keep them from interfering with their movements. Both

younger and older age groups found shirt fit to be non-proportional and shirt chest and arm areas

to be restricting. The younger men of study 1 had high occurrences of bicep prominence, which

could explain the non-proportional arm fit. Sindicich and Black (2011) found that men shared

frustrations with non-proportional fit of business clothing, particularly in torso and chest areas of

shirts. Tate and Glisson (1963) found that older age groups needed more attention paid to the

back width for occurrences of stooped posture. Similarly, Chattaraman et al. (2013) concluded

that men prefer looser fit for dress shirts and polo shirts as they age. Study 1 showed that older

men had higher occurrences of stooped posture and abdomen prominence, which could explain

fit preferences for looser fitting shirts across the back, around the arms, and the waist in study 2.

The tall height group found that sleeve lengths were not proportional to the chest

circumference measurements for them; the sleeves were generally too short. Overall, if the men

found a shirt that fit in one area of their body, it would not fit elsewhere. For example, with the overweight BMI group, once the neck fit and sleeve lengths were appropriate, the chest area was baggy. The shirt fit issues increase the importance of correct sizing and grading with respect to neck and chest circumference, and sleeve length for larger and taller males. Updated measurements for the target market could minimize a range of issues concerning both pant and shirt fit.

Length Preferences Influenced by BMI, Height, and Age

The men repeatedly discussed length preferences for their sleeves, body, and pant legs. They shared preferences for longer lengths in all of the outdoor performance apparel. The tall and young men talked the most about the length of both pants and shirts. Both BMI groups (normal and overweight) identified length preferences for different areas of their clothing; however, little variation was seen between the two groups as illustrated in the following discussion.

Study 2 results revealed that sleeve length was a frequent topic of concern for all men. For the height groups, the tall and regular height men discussed sleeve length preferences with similar frequency counts and there were slight differences for the younger and older men. The overweight BMI group spoke more about sleeve length than the normal BMI group. All the men discussed preferences for long sleeves for their outdoor performance shirts and jackets. However, the overweight BMI group noted that they were often annoyed when their sleeves would not stay near their wrists while their arms were in motion. Though discussing different functions for apparel, Sindicich and Black's (2011) research found men to be dissatisfied with the sleeve length of business attire. To address this length issue, manufacturers could increase the availability of variable sleeve lengths with same body measurements just as pants are offered in different inseam measurements to minimize length issues.

Body length was the second integral topic of discussion relating to length. The overweight, tall, and younger men predominately spoke about the length of shirts and jackets. They were frustrated with their shirts coming 'un-tucked' while moving. Connell et al. (2009) reported that younger boys identified issues with shirt length. The men were satisfied with the overall fit of their jackets but preferred longer body lengths to cover their body appropriately. Like the shirt length, excessive movement while wearing the jacket may cause unwanted exposure to certain parts of the body during activities. Outdoor performance companies should pay closer attention to consumers' preferences for lengths of shirts and jackets and ensure the availability of longer length styles in shirts and jackets.

The third and final sub-theme of length, pertaining to the length of the pant leg, was frequently discussed by the young and tall groups. Both BMI groups spoke about pant length equally. The tall men preferred long pant leg options, but did not state that they had issues finding the correct pants. The younger men spoke about pant length shortness and the results are consistent with previous studies that have found that men have issues with overall pant leg length (Connell, Ulrich, Simmons, Pascoe, & Bruner, 2007; Connell et al., 2009; Tate & Glisson, 1963). Connell et al. (2007; 2009) found that pant length was an issue for tween boys, who were dissatisfied with the available lengths of pants and desired longer pant legs. Tate and Glisson (1963) found that older men prefer shorter pant lengths because of their loss in height. Clothing designed for younger men should be offered in longer lengths while regular lengths should be made available in greater quantities for older men. Offering more inseam lengths and alterable pant hem may assist in minimizing the length issue for all ages of men.

Sizing Preferences Influenced by BMI, Height, and Age

Sizing was included in understanding fit preference in this study because men often spoke about sizes when discussing their preferences and issues related to clothing fit. The men

identified more issues with sizing for business and dress clothing compared to outdoor performance clothing. They stated that they bought looser fitting and less structured clothing for outdoor performance apparel and consequently some fitting issues were eliminated. Though there were fewer sizing issues relating to men's performance outdoor apparel, the men still discussed inconsistent sizing across brands, inconsistent sizing within a single brand, and big and tall sizing issues.

The men were frustrated with differences in fit and the inconsistencies within the same sizes across multiple brands. They recognized the lack of standardization of sizing for all of men's wear but found it even more frustrating that there were inconsistencies with sizing and fit within a single brand. Once the men found a brand and a particular style they liked, they would buy the garment(s) repeatedly. For example, the men would buy multiple pairs of pants in the same style and some would fit, while others were too tight. The men stated that they did not like to try-on outdoor performance clothing in the stores, and thus inconvenient returns would have to be made. Creating greater consistency of sizing and fit would ensure fewer returns for companies. These issues further prove the need for greater standardization for men's clothing. But as Ashdown (1998) suggested, grading and sizing systems need to be created based on the age, height, and weight of the target market to satisfy the largest range of male consumers.

The men identified issues within 'Big and Tall' sizing by stating that they often needed longer lengths in clothing. They stated that many brands did not offer additional lengths for outdoor performance apparel. The men had issues with 'Big and Tall' offerings and said the clothing was often too big and too long. Many men only needed either 'big' or 'tall' and not both together. For outdoor performance clothing, companies could provide longer lengths in sleeves, body, and pant legs for the sizes they already provide. To address the "Big" issue,

companies could provide more sizes or increase their grading increments to reach more male customers who are larger.

The overweight, tall, and younger men discussed the inconsistencies in sizing the most, but these were also identified by all other men. Previous studies have reported similar problems with inconsistent sizing and size availability for men (Ashdown, 1998; Connell et al., 2009; Sindicich & Black, 2011). Connell et al. (2009) reported that tween boys were dissatisfied with the availability of clothing that fit them. An example of sizing inconsistency was found in Sindicich and Black's (2011) research of men's business attire. They found inconsistencies between the actual sleeve measurement and the sleeve length measurement for sizing. Ashdown (1998) found that current sizing standards for women are not complete and lack standardization.

These confirmatory results on men's sizing provide a strong indication that sizing standards should be updated for all of men's clothing. Outdoor performance clothing brands should consider updating their sizing standards and in turn offer a greater variety of longer lengths, and larger and consistent sizes for men. Creating more sizing consistency in the shirt chest and pant waist, hip and crotch measurements would benefit outdoor performance apparel fit.

Study 2 is important because it examines an under-researched clothing category, outdoor performance apparel. Previous studies have examined men's fit preferences for business apparel and specific apparel pieces. Outdoor performance apparel is a growing clothing category with its advances in fabric technology, function and design details for better usability. Previous studies have not explored men's fit preferences and fit issues with outdoor performance apparel using focus group interviews. These results and insights can assist the industry in providing better fitting performance and outdoor clothing. It also provides companies feedback on current offerings in the outdoor performance apparel market from avid outdoor activists. Both studies

also provide researchers and industry professionals with specific information for improving clothing fit for men.

<p style="text-align:center">Limitations and Recommendations for Future Research</p>

Limitations

The SizeUSA (2004) secondary data that was used for study 1 was collected almost 10 years ago. A more recent dataset may have been appropriate for the analysis conducted in this study; however, it was unavailable at the time of the current analysis. In using this dataset, it was found that body area shape was recorded dichotomously as 'yes' or 'no'. Specifying the degree to which the individual possessed the body area shape indicator (slight, moderate, or severe) would have been more valuable to the analysis. Additionally, SizeUSA (2004) did not include information on how the body area shapes were operationally defined. This could affect the validity of study 1's results.

In study 2, the qualitative data was coded for themes by a single coder. Inter-rater reliability was not feasible for more than one person to analyze the data and independently create themes. Therefore during the coding and theme development stages, the researcher discussed interpretation with thesis advisors multiple times to eliminate as much research bias as possible. This process resulted in further delineations of themes and combination of themes. Though the researcher (coder) conducted thorough analysis of the focus group data, human error and research bias could be a possible limitation of study 2. The small homogeneous sample could also be considered a limitation of the study 2. The sample could not be differentiated based on ethnicity or geographical location. A majority of the sample consisted of younger males under the age of 30 years. A sample with an even distribution of older and younger men would have provided greater validity to results of age-related research question. Further, BMI was used as a measure of body size. BMI does not account for muscle mass and hence some men, who were

identified as overweight, physically appeared as a normal BMI classification. This may have affected the validity of the BMI-related research question results.

In conducting the focus group interviews, the researcher found that men do not easily articulate clothing fit issues. It was more difficult for the moderator to get the men to understand the specific fit questions and thus the men often spoke about design details and functions they noticed in their outdoor performance apparel. Additionally, another reason that men were not able to articulate fit preferences may be attributed to the fact that they have more issues with other types of clothing such as business apparel and not performance and outdoor clothing. Also, the men may have been thinking of other types of clothing (Ex. business clothing) while discussing their preferences and issues. It was also evident to the moderator that the men were not always able to articulate fit preferences of clothing until they discussed the fit issues they had experienced. The men were able to speak about their preferences once they voiced their issues. As are result, results provided more comments of fit issues than preferences.

It should also be mentioned that men do not like to try on clothing in the store. As a result they are unable to assess fit and sizing problems before they purchase the clothing. This could explain why they have more fit problems with the clothing purchase. During the focus group discussions, the men often discussed crotch fit issues and preferences and gave their opinions on how the issues could be alleviated. Though the men spoke about crotch fit, the problems could have been a variety of pattern issues. Their lack of pattern and clothing design knowledge could have resulted in the use of incorrect terminology in regards to fit.

Recommendations for Future Research

The results from study 1 demonstrate the need for further research of men's body shapes. SizeUSA (2004) has provided researchers and industry with an extensive dataset. However, it has been approximately 10 years since this data was collected. A similar national study on men's

bodies is warranted in the near future. There are several scales available for women's body shape; however, there is a lack of body shape scale development for men, which needs to be addressed in the future. The present study examined 8 of the 22 body area shapes from the SizeUSA (2004) data that related to shape and posture. Future research can examine the remaining body area shapes for men's clothing fit.

Future research should conduct additional small focus groups interviews with men in different geographical locations for variations in ethnicity. Additionally, for this type of clothing category it may be beneficial to have the participants try on and use the clothing for specified time in order to obtain focused and useful responses. Future research should also consider using an alternative way to calculate body size. BMI does not account for muscle mass. Body scanning the participants may be a more effective method to analyze body size.

The present research used a questionnaire to supplement the findings from the focus group discussions. The questionnaire created body area shape questions based on the eight variables used in study 1. The researchers suggest that for self-report methodology, body area shape and body shape scales be created with clear illustrations and descriptions for men. Flaws in self-report can also be minimized using body scanning technology to determine body area shape.

REFERENCES

Arima, E. (2001). The effects of obesity on adolescent development. Retrieved from

http://serendip.brynmawr.edu/biology/b103/f01/web1/arima.html

Ashdown, S. P. (1998). An investigation of the structure of sizing systems: A comparison

of three multidimensional optimized sizing systems generated from anthropometric data

with the ASTM standard D5585-94. *International Journal of Clothing Science and

Technology, 10*(5), 324-341.

Ashdown, S. P. (2000, May). Introduction to sizing and fit research. Paper presented at

the Fit Symposium, Clemson Apparel Research. Retrieved from

http://www.car.clemson.edu/fit2000

ASTM.org. (2013). Retrieved from http://www.astm.org/NEWS/Mission2.html

August, B. (1981). *The complete Bonnie August dress thin system: 642+ ways to

correct figure flaws with clothes*. New York: Rawson, Wade Publishers.

Beck, M. (2011, September 20). Yes, you are getting shorter. *The Wall Street Journal*.

Retrieved from

http://online.wsj.com/article/SB10001424053111904194604576580720025344668.html

Bernstein, D., Ottenfel, M., & Witte, C. (2011). Consumer attitudes and perceptions concerning

active adult communities: an exploratory study. *Journal of Management and Marketing

Research, 15*(2), 1-17.

Biecher, E., Keaton, P. N., & Pollman, A. W. (1999). Clothing and dress (Social

aspects). *SAM Advanced Management Journal, 64*(1), 17.

Bird, P. J. (2006). Why does fat deposit on the hips and thighs of women and around the

stomachs of men? *Scientific American*. Retrieved from

http://www.scientificamerican.com/article.cfm?id=why-does-fat-deposit-on-t&page=2

Boorady, L. M. & Schofield, N. A. (2007, June). Using SizeUSA data to examine the

 relationship of bust to waist to hips. PowerPoint presentation presented at the SizeUSA

 User Meeting.

Body Mass Index (BMI). (2013). Retrieved from

 http://www.medindia.net/patients/patientinfo/body-mass-index-limitations.htm

Boyce, J. R. (1984). Meralgia patesthetica and tight trousers. *Journal of the American Medical*

 Association, 251(12).

Brannon, E.L. (1971*). Graphic somatometry in the development and application of*

 posture and body build scales for men. Unpublished master's thesis. Auburn

 University, Alabama.

Brown, J. D. & Gallagher, F. M. (1992). Coming to terms with failure: Private self-

 enhancement and public self-effacement. *Journal of Experimental Social Psychology, 28*,

 3-22.

Burns, L. D., & Bryant, N. O. (2002). *The business of fashion: Designing, manufacturing and*

 marketing (2nd Ed.). In O. Knotzias, S. L. Weber, & B. Appleborne (Eds.), (pp. 137).

 United States of America: Fairchild Publications.

Campbell, L. D. & Horne, L. (2001). Trousers developed from the ASTM D5586 and the

 Canadastandard sizing for women's apparel. *Clothing and Textiles Research Journal, 19*,

 185-193.

Carhartt size chart, regular, short, & tall sizes. (2012). *Tractor Supply Company*. Retrieved from

 http://www.tractorsupply.com/wcsstore/ConsumerDirectStorefrontAssetStore/

 images/products/SizeChar/mens.html

Center for Disease Control Prevention (CDC) (2000*). Growth Charts for the United States.

National Health and Nutrition Examination Survey. Retrieved from

http://www.cdc.gov/nchs/data/erratas/growthcherrata.pdf

Center for Disease Control Prevention (CDC). (2010). *Obesity and genetics.* Retrieved from

http://www.cdc.gov/Features/Obesity/

Center for Disease Control Prevention (CDC). (2012a). *Adult obesity facts*. Retrieved from

http://www.cdc.gov/obesity/data/adult.html

Center for Disease Control Prevention (CDC). (2012b). *Body mass index*. Retrieved from

http://www.cdc.gov/healthyweight/assessing/bmi/

Chattaraman, V., Simmons, K., & Ulrich, P. (2013). Age, body size, body image, and

fit preferences of male consumers. Manuscript under review.

Christman, M. C. & Kidwell, C. B. (1974*). Suiting everyone: The democratization of*

clothing in America. Washington D. C.: Smithsonian Institute Press.

Chumlea, W., Roche, A., & Webb, P. (1984). Body size, subcutaneous fatness and total body fat

in older adults. *International Journal of Obesity, 8*, 311-317.

Chun-Yoon, J., & Jasper, C. (1995). Consumer preferences for size description systems

of men's and women's apparel. *The Journal of Consumer Affairs, 29*(2), 429-441.

Connell, L. J., Ulrich, P., Brannon, E. L., Alexander, M., & Presley, A. B. (2003). *Body shape assessment scale*. Unpublished instrument. Department of Consumer Affairs, Auburn University, Auburn, Alabama.

Connell, L. J., Ulrich, P. V., Brannon, E. L., Alexander, M., & Presley, A. B. (2006). Body Shape Assessment Scale: Instrument development for analyzing female figures. *Clothing and Textiles Research Journal, 24*(2), 80-95

Connell, L. J., Ulrich, P. V., Simmons, K. P., Pascoe, D., & Bruner, D. (2007*). Apparel product development for plus-sized tween and teen boys*. National Textile Center Annual Report. (NTC Project: SO6-AC03). Retrieved from http://www.ntcresearch.org/pdf-rpts/Bref0607/S06-AC03-07.pdf

Connell, L. J., Ulrich, P. V., Simmons, K. P., Chattaraman, V., Pascoe, D., & Bruner, D. (2009). *Apparel product development for plus-sized tween and teen boys*. National Textile Center Annual Report. (NTC Project: SO6-AC03-7). Retrieved from http://www.ntcresearch.org/pdf-rpts/AnRp09/S06-AC03-A9.pdf

Cottle, F. S. (2012). *Statistical human body form classification: Methodology development and application*. Unpublished doctoral dissertation. Auburn University, Alabama. Retrieved from http://etd.auburn.edu/etd/handle/10415/3071

Craik, I. (1994). *The face of fashion: Cultural studies in fashion*. New York, New York: Routeledge.

Croney, J. (1971). *Anthropometry for designers*. New York: Van Nostrand Reinhold.

Dolgoff, S. (2013). Defying Gravity: How to build a stronger, defined butt. Mind, Body, Spirit,

    Fitness. Retrieved from

    http://www.fitnessmagazine.com/fitness/printableStory.jsp?storyid=/templatedata/fitness/

    story/data/1326128247257.xml&catref=ftn112

Felsenthal, J. (2012). A size 2 is a size 2 is a size 8: Why clothing sizes make no sense.

    Retrieved from

    http://www.slate.com/articles/arts/design/2012/01/clothing_sizes_getting_bigger_why_ou

    r_sizing_system_makes_no_sense_.single.html#return

Feather, B.L., Ford, S., & Herr, D.G. (1996). Female collegiate basketball players' perceptions

    about their bodies, garment fit and uniform design preferences. *Clothing and Textiles*

    Research Journal, 14(1), 22-29.

Fredrick, D. & Peplau, A. (2007). The UCLA body matrices II. UCLA Department of

    Psychology. PowerPoint Presentation retrieved from http://dred.bol.ucla.edu

Frings, G. (1999). *Fashion from concept to consumer* (3rd Ed.). Englewood Cliffs, NJ:

    Prentice-Hall.

Frith, H. & Gleeson, K. (2004). Clothing and embodiment: Men managing body image

    and appearance. *Psychology of Men and Masculinity 5*(1), 40-48.

Fu, M. L. (2004). *Fitting overweight and obese women: Integrating body shape analysis with an*

    understanding of preferences and problems. Unpublished doctoral dissertation. Auburn

    University, Auburn, AL.

Garn, S. M., & Young, R. W. (1956). Concurrent fat loss and fat gain. *American Journal of Physical Anthropology, 14*(3), 497-504.

Glaser, B. G. & Strauss, A. L. (1967). *The discovery of grounded theory: Strategies for qualitative research.* Chicago: Aldine Publishing Company.

Goldsberry, E., Shim, S., & Reich, N. (1996a). Women 55 and older: Part I. Current Body measurements as contrasted to the PS 42-70 data. *Clothing and Textiles Research Journal, 14*(2), 108-119.

Goldsberry, E., Shim, S., & Reich, N. (1996b). Women 55 and older: Part II. Overall satisfaction and dissatisfaction with the fit of ready-to-wear. *Clothing and Textiles Research Journal, 14*(2), 121-132.

Gordon, C., Churchill, T., Clauser, C., Bradtmiller, B., and McConville, J. (1988). Anthropometric survey of the U.S. Army Natick R & D Center. *Technical Report NaticklTR-891044.*

Hogge, V. E., Baer, M., & Kang-Park, J. (1988). Clothing for elderly and non-elderly men: A comparison of preferences, perceived availability and fitting problems. *Clothing and Textiles Research Journal, 6(*4), 47-53.

Hye, J. (1998, March 25). The custom touch. *Women's Wear Daily*, p. 13

Kernalequen, A. (1978). *Clothing designs for the handicapped*. Edmonton, Alberta, Canada: The University of Alberta Press.

Kwon, Y. H. (1997). Sex, sex-role, facial attractiveness, social self-esteem and interest in clothing. *Perceptual and Motor Skills, 84*, 899-907.

LaBat, K. L. & DeLong, M. R. (1990). Body cathexis and satisfaction with fit of apparel. *Clothing and Textiles Research Journal, 8*(2), 43-47.

Laing, R. M., Holland, E. J., Wilson, C.A. & Niven, B. E. (2010). Development of sizing systems for protective clothing for the adult male. *Ergonomics, 42*(10), 1249-1257.

Leventhal, R. C. (1997). Aging consumers and their effects on the marketplace. *Journal of Consumer Marketing, 14*(4), 276 – 281.

McDowell, M., Fryer, C., Ogden, C. L., & Flegal, K. M. (2008). Anthropometric reference data for children and adults: United States, 2003- 2006. *National Health Statistics Reports, 10*, 1-48.

McDowell, M., Fryer, C., Ogden, C. L., & Flegal, K. M. (2012). Prevalence of obesity in the United States. *National Health Statistics Reports, 82*, 1-8.

McKinnon, L., & Istook, C. (2001). Comparative of the image twin system and the 3T6 body scanner. *Journal of Textile and Apparel Technology and Management, 1*(2), 1-6.

Mellian, *S.,* Ervin, C., & Robinette, K. (1990). Sizing evaluation of navy women's uniforms. *Navy Clothing and Textile Research Facility Technical Report No. NCTRF* 182

Minshall, B., Winakor, G., & Swinney, J. L. (1982). Fashion preferences of males and females, risks perceived and temporal quality of styles. *Home Economics Research Journal, 10,* 369-380.

New jeans for truckers designed for long hauls. (1983). *The Milwaukee Journal.* Retrieved from http://news.google.com/newspapers?nid=1499&dat=19830313&id=WGkaAAAAIBAJ& sjid
=6ykEAAAAIBAJ&pg=4730,880023

O'Brien, R., & Shelton, W. (1941). Women's measurements for garment and pattern

construction. (*U.S. Department of Agriculture Miscellaneous Publication No.454*).

Washington, DC: U.S. Government Printing Office.

Ogden, C.L., & Carroll, M.D. (2010). Prevalence of overweight, obesity, and extreme obesity

among adults: United States, trends 1960–1962 through 2007–2008**.** National Center for

Health Statistics. Retrieved from

http://www.cdc.gov/nchs/data/hestat/obesity_adult_07_08/obesity_adult_07_08.pdf

Ogden, C.L., Carroll, M. D., Kit, B. K. & Flegal, K. M. (2012). Prevalence of obesity in the

United States, 2009-2010. Data Brief. Retrieved from

www.cdc.gov/nchs/data/databriefs/db82.htm

Palmquist, R. (2006). *Discourse Analysis*. Retrieved from

http://www.gslis.utexas.edu/~palmquis/courses/discourse.htm

Pattern grading. (2012) Retrieved from http://en.wikipedia.org/wiki/Pattern_grading

Pisut, G. & Connell, L. J. (2007). Fit preferences of female consumers in the USA.

Journal of Fashion Marketing and Management, 11(3), 366-379.

Poehlman, E. T., Toth, M. J., Bunyard, L. B., Gardner, A. W., Donaldson, K. E., Colman,

E., Fonong, T., & Ades, P. A. (1995). Physiological predictors of increasing total and

central adiposity in aging men and women. *Archives of Internal Medicine, 155*(22), 2443-

2448.

Robinette, K., Mellian, S., and Ervin, C. (1990). Development of sizing systems for navy

women's uniform. *Navy Clothing and Textile Research Facility Technical Report No.*

NCTRF 182

Rueda, S., Rebane, M., & Thaller, S. (2012). Contour deformities after massive weight loss. In

B. S. Atiyeh & M. Costagliola (Eds.), *Body Contouring Following Bariatric Surgery and Massive Weight Loss: Post Bariatric Body Contouring*. Bentham Science Publishers.

Schafer, R. C. (1987). Body alignment, posture, and gait. In Wiliams & Wilkins (Eds.), *Clinical Biomechanics: Musculoskeletal Actions and Reactions.* Retrieved from http://www.chiro.org/ACAPress/Body_Alignment.html

Schewe, C. (1988). Marketing to our aging population: Responding to physiological changes. *The Journal of Consumer Marketing, 5*(3), 61-73.

Schwartz, R. S., Shuman, W. P., Bradbury, V. L., Cain, K. C., Fellingham, G. W., Beard, J. C., Kahn, S. E., Stratton, J. R., Cerqueria, M. D., & Abrass, I. B. (1990). Body fat distribution in healthy young and older men. *Journal of Gerontology,45*(6), 181-185.

Schofield, N. A. & LaBat, K. L. (2005). Exploring the relationships of grading, sizing, and anthropometric data. *Clothing & Textile Research Journal. 23*(1), 13-27.

Shannon, E. (1987). Apparel's new role of function and comfort. *Canadian Home Economics Journal, 37*(1), 12-15.

Simmons, K. P. (2002). Body shape analysis using three-dimensional body scanning technology. Unpublished Doctoral Dissertation. North Carolina State University, Raleigh, NC.

Simmons, K. P., Istook, C. L., & Devarajan, P. (2004). Female figure identification

technique (FFIT) for apparel, part II: Development of shape sorting software. *Journal of*

Textile and Apparel Technology and Management, 4(1). Retrieved from

www.tx.ncsu.edu/jtatm/.../articles/.../Istook_full_107_04.pdf.

Sindicich, D. & Black, C. (2011). An assessment of fit and sizing of men's business

clothing. *Journal of Fashion Marketing and Management, 15*(4), 446-463.

SizeUSA. (2004). The National Sizing Survey. [Data file and Data Book].

Standardization of Women's Clothing. (2004). Short history of ready to wear clothing.

National Institute of Standards and Technology. Retrieved from

http://museum.nist.gov/exhibits/apparel/history.htm

Tate, M. T., & Glisson, O. (1963). *Family clothing*. New York, New York: John Wiley.

[TC]^2.com. (2011). SizeUSA. Retrieved from http://www.tc2.com/sizeusa.html

[TC]^2.com. (2012). 3D body scanning technologies. Retrieved from

http://www.tc2.com/index_3dbodyscan.html

Teague, L. (2007). Fat can contribute to bow legs. Retrieved from http://voices.yahoo.com/fat-

contribute-bow-legs-307336.html

TEonline.com. (2012). Performance Apparel and its Global Market Trends. Retrieved

from http://www.teonline.com/knowledge-centre/performance-apparel-global-

market.html

The importance of posture. (2013). Retrieved from

http://www.postureclinic.ca/content.php?cms_id=2

Thibodeau, G. A. & Anthony, C. P. (1990). *Anthony's Textbook of anatomy and physiology*. St. Louis: Times Mirror/Mosby College Publication.

U.S. Department of Commerce. (1971) Voluntary product standard: Body measurements for the sizing of women's patterns and apparel. NIST Publication No. PS 42-70, Washington, DC.

Visser, M. & Harris, T. B. (2012). Body composition and aging. In A. B. Newman and J.A. Cauley (Eds.), *The Epidemiology of Aging* (pp.275-292) doi:10.1007/978-94-007-5061-6_16

Weight, height and selected body dimensions of adults: United States 1960-1962. (1965). *Vital and Health Statistics.* Data from the National Health Survey from the Department Health, Education, and Welfare. Series 11, Number 8.

Windisman, A. (2011). How clothing brands are getting personal. *Sparksheet*. Retrieved from http://sparksheet.com/clothing-brands-get-personal/

Woodson, E. M., & Horridge, P. (1986). Maturation changes vs. government sizing standards for women. *ACPTC Proceedings: National Meeting.* Monument, CO: ACPTC.

Workman, J. E. (1991). Body measurement specifications for fit models as a factor in clothing size variation. *Clothing and Textiles Research Journal, 10*(1), 31-35.

Workman, J. E. & Lentz, E. S. (2000). Measurement specifications for manufacturer's prototype bodies. *Clothing and Textiles Research Journal, 18*(4), 251-259.

Wrangler. (2012). Our unique u-shape construction. Retrieved from http://wranglerjeans.wrangler.com/wrb_feat_ushape.php

Yoon, J.C., & Radwin, R. G. (1994). The accuracy of consumer-made body measurements for

women's mail-order clothing. *The Journal of Textile and Apparel, Technology and*

Management, 2(2), 1-11.

Zakim, M. (1999). A ready –made business: The birth of the clothing industry in

America. *Business History Review*, 73, 61-90.

Zernike, K. (2004, March 1). Sizing up America: Signs of expansion from head to toe. *New*

York Times. Retrieved from http://www.nytimes.com/2004/03/01/us/sizing-up-america-

signs-of-expansion-from-head-to-toe.html?src=pm

APPENDIX A

IRB Approval Form, Modification Form, and Informed Consent

Final Approval, Protocol # 13-044 EP 1302

IRB Administration [irbadmin@auburn.edu]
Tuesday, February 19, 2013 10:27 AM

To:	☐ Martha Faber
Cc:	☐ Veena Chattaraman; ☐ Carol Warfield
Attachments:	📄 Investigators Responsibil~1.docx (16 KB) [Open in Browser]

Dear Ms. Faber,

Your revisions to your protocol entitled "Men's Body Shape Analysis and Men's Clothing Fit Preferences " have been reviewed. Your protocol has now received final approval as "Expedited " under federal regulation 45 CFR 46.110(6,7).

Official notice:
This e-mail serves as official notice that your protocol has been approved. A formal approval letter will not be sent unless you notify us that you need one.   By accepting this approval, you also accept your responsibilities associated with this approval. Details of your responsibilities are attached. Please print and retain.

Consent document:
Your approved, stamped consent will soon be sent by campus mail. You should have already received a scanned copy.

Please note that *you may not begin your research that involves human subjects until you receive the consent* with an IRB approval stamp applied. You must use copies of that document when you consent participants, and provide a copy (signed or unsigned) for them to keep.

Expiration:
Your protocol **will expire on February 9, 2014.** Put that date on your calendar now. About three weeks before that time you will need to submit a final report or renewal request.

If you have any questions, please let us know.

Best wishes for success with your research!
Susan

Susan Anderson, IRB Administrator
IRB / Office of Research Compliance
115 Ramsay Hall (basement)
Auburn University, AL 36849
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AUBURN UNIVERSITY

COLLEGE OF HUMAN SCIENCES

(NOTE: DO NOT SIGN THIS DOCUMENT UNLESS AN IRB APPROVAL STAMP WITH CURRENT DATES HAS BEEN APPLIED TO THIS DOCUMENT.)

INFORMED CONSENT
for a Research Study entitled
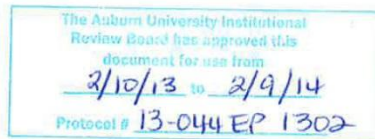**"Men's Body Area Shape Analysis and Men's Clothing Fit Preferences"**

You are invited to participate in a research study to understand the wants and needs of men who wear outdoor and performance clothing and who are actively involved in outdoor activities such as hunting, fishing, hiking/climbing, and canoeing/kayaking. The study is being conducted by Eloise Faber, graduate student under the direction of Drs. Veena Chattaraman and Karla Simmons in the Auburn University Department of Consumer and Design Sciences. You were selected as a possible participant because you are a male who is actively involved in outdoor activities and wear outdoor or performance apparel regularly and are age 19 or older.

If you decide to participate in this research study, you will be asked to be a part of a focus group interview. You will also be asked to complete a questionnaire as part of this focus group interview to help us describe your demographic and socioeconomic information, body perception, and preferences of clothing, brands, and sizes. Your total time commitment will be approximately one hour and thirty minutes.

The entire focus group interview will be audio and video recorded. All the information will be collected confidentially, and we will not use your name in analyzing or reporting the information that you provide us. Your participation in this study will enable the researchers to develop important recommendations on making outdoor performance apparel better fit men of all ages who are active in outdoor activities.

To thank you for your time you will be offered a compensation of $25. If you change your mind about participating, you can withdraw at any time during the study. Your participation is completely voluntary. If you choose to withdraw, your data can be withdrawn as long as it is identifiable. Your decision about whether or not to participate or to stop participating will not jeopardize your future relations with Auburn University, the Department of Consumer and Design Sciences or the researchers.

Participant's initials _____

The Auburn University Institutional Review Board has approved this document for use from 2/10/13 to 2/9/14 Protocol # 13-044 EP 1302

Page 1 of 2

Your privacy will be protected. Any information obtained in connection with this study will remain confidential. The researchers will work to ensure that any information obtained in connection with this study will remain confidential. However, we cannot guarantee that focus group participants will keep all of the information discussed in the groups private. Information obtained through your participation may be used fulfill an educational requirement, published in a professional journal, and/or presented at a professional meeting, etc. Within a year after publication, the video and audio records of your interview will be destroyed permanently.

If you have questions about this study, *please ask them now or* contact Eloise Faber at (334) – 430- 1686 or mef0001@auburn.edu. A copy of this document will be given to you to keep.

If you have questions about your rights as a research participant, you may contact the Auburn University Office of Human Subjects Research or the Institutional Review Board by phone (334)-844-5966 or e-mail at hsubjec@auburn.edu or IRBChair@auburn.edu.

HAVING READ THE INFORMATION PROVIDED, YOU MUST DECIDE WHETHER OR NOT YOU WISH TO PARTICIPATE IN THIS RESEARCH STUDY. YOUR SIGNATURE INDICATES YOUR WILLINGNESS TO PARTICIPATE.

Participant's signature	Date	Investigator obtaining consent	Date

Printed Name	Printed Name

	Co-Investigator	Date

Printed Name

> The Auburn University Institutional
> Review Board has approved this
> document for use from
> 2/10/13 to 2/9/14
> Protocol # 13-044 EP 1302

APPENDIX B

Focus Group Interview Guide

Open Ended Questions

1. What is your favorite brand of clothing? Why?

2. What <u>features</u> do you like about hot weather outdoor gear? What do you like to wear

   when it is hot?

3. What <u>features</u> do you like about cold weather outdoor gear? What do you like to wear in

   the cold?

When you go shopping for an outfit for (name the activity for the particular focus group) for
yourself, how easy/difficult is it for you to find things that fit you? Or that you want to buy
while shopping?

Let's start with *shirts*

4. Are shirts (Button up/down shirts, Polo shirts) easy to find to fit you? Hard to buy? Why?

   - Are there any brands of shirts that you think really fit your body?

   - How do you want your shirts to fit you? (Button up shirts/Polo shirts)

   - What makes different shirts not fit you?

   - Do you ever have problems with the length of shirts? Does the shirt tail come out

     when you tuck your shirt in? Is the front shirt tails too long or too short? Is the

     back shirt tails too long or too short?

   - What about the sleeves lengths on shirts, are they normally okay, too short, too

     long?

- Do the neck of the shirts usually fit you properly? Are you usually able to button the top button? Do you have any recommendations for shirt neck fit?

5. Are t-shirts or sweatshirts easy to buy? Hard to buy? Why?
   - How do you like them to fit?
   - What makes them not fit?
   - Are there any brands of t-shirts or sweatshirts that you think really fit your body?

- Where do you like to have more space or more stretch in shirts? In the front? In the back? In the arms?

What about *pants?*

6. Are pants easy to find to fit you? Hard to buy? Why?

7. Are there any brands of pants that you think really fit your body?

8. How do you want your Cargo pants or khaki pants to fit you?
   - How do you like them to fit?
   - What makes them not fit?
9. What about sweatpants, wind pants, or athletic shorts?
   - How do you like them to fit?
   - What makes them not fit?
10. Do you ever have problems with the length of pants?

11. Is the crotch length ever an issue in pants?

12. How do you feel about the pockets in pants? Are they large enough? Are they too bulky?

13. Do you prefer pants with waist bands with zippers and buttons or do you like an elastic waist band?

14. Do you like stretch in your pants? In the waist band? In the knee? Around the ankle?

15. Where do you like to have more space or stretch in pants in general?

What about *base layers***?**

16. How do you want your base layers to fit you?

17. Are base layer shirts easy to find to fit you? Hard to buy? Why?

18. Are base layer pants easy to find to fit you? Hard to buy? Why?

What about *outwear*?

19. How do you want your outwear to fit you?

20. Are jackets easy to find to fit you? Hard to buy? Why?

- Are there any brands of jackets that you think really fit your body?

- Are there any brands of jackets that you think really perform well for

    hunting/fishing/hiking/climbing/canoeing/kayaking?

- Do the jackets fit well over your other clothes?

- Do you have a problem with the fit of hoods (i.e. Rain Jackets)?

21. Are outerwear pants easy to find to fit you? Hard to buy? Why?

- Do the outerwear pants fit well over your other clothes?

- Are there any brands of outerwear pants that you think really perform well for

    hunting/fishing/hiking/climbing/canoeing/kayaking?

We are interested in knowing what sizes you buy for yourself. Do you like to buy clothing with letter sizes (Small, Medium, Large, X-large...)? Do you find that number sizes are easy to buy and understand?

Big and Tall Sizes – For Big and Tall sizes, are there any issues you have with the sizing? Is it clear to understand or confusing? Can you find what you need? Can you find clothing that fits you in the Big and Tall section? What brands have you found that provide an adequate selection of extended sizes? What would be some of your suggestions for the Big and Tall sizing and fit category?

Are there any clothing items that you would like to buy for yourself but you cannot find to fit you?

Would you buy more clothing if you could find clothing that fits?

Focused Questions

22. Are you able to find outdoor performance clothing that you like? Give examples of things you have been able to find that you like/ dislike. [RQ #4]

23. Are you able to find outdoor performance clothing that fits you? [RQ #4] Give examples.

24. Do you have any problems in finding outdoor performance clothing based on your height? [RQ #5] Are the lengths of garments too long or too short? What about the inseam length normally found in pants? Rise? Crotch length?

25. Do you have any problems in finding outdoor performance clothing based on your body size? [RQ #4]

26. Besides the overall size of your body or your height of your body, do you have any problems in finding outdoor performance clothing based on your body shape? [RQ #6] Are there areas of your body that are difficult to fit?

27. Do you have any problems in finding outdoor performance clothing based on your posture? Does the way you walk, sit, stand make clothing hard to fit you?

28. How have your fit preferences of outdoor performance clothing changed over the years? Are there clothes that you would wear now that you would not have worn previously? Or are there clothes that you would not wear now that you used to wear? [RQ #7]

29. Are there any brands you would wear now that you would not have worn previously? Or are there brands that you would not wear now that you used to wear? Why is that?

Study 2 Questionnaire

Member Number _____

Direction: Please answer the questions below by checking the appropriate circle, filling in the blank, or writing your answer.

1. Place a check (✓) next to ALL the activities that you participate in. Next to each activity, also circle the number that indicates the frequency with which you perform that activity using the scale below:

Check here	Activity	everyday	2-5 times a week	Once a week	Once a month	2-5 time a year	never
	Hunting	1	2	3	4	5	6
	Fishing	1	2	3	4	5	6
	Hiking/Climbing	1	2	3	4	5	6
	Canoeing/ Kayaking	1	2	3	4	5	6

2. How many **pieces of clothing** do you buy a year for the outdoor activities you participate in?

_____ 0-2
_____ 3-5
_____ 6-10
_____ 11-15
_____ 16 OR MORE PIECES A YEAR

3. Please select all of the types of **stores** that you purchased outdoor performance clothing from in the last 12 months.

_____ DEPARTMENT STORES (BELK, DILLARD'S, MACY'S, ETC.)

_____ SPECIALTY STORES (GAP, OLD NAVY, EDDIE BAUER, ETC.)

_____ WAREHOUSE CLUBS (SAM'S, BJ'S, COSTCO, ETC.)

_____ FACTORY OR COMPANY OUTLET STORES

_____ SPORT SPECIALTY STORES (SPORTS AUTHORITY, FOOT LOCKER, ETC.)

_____ MAIL ORDER CATALOG, TV, OR INTERNET   -Name the Company

_____

4. Please select all of the **specific stores** that you purchase outdoor performance clothing from in the last 12 months.

_____ WAL- MART

_____ K-MART

_____ BASS PRO SHOP

_____ CABELA'S

_____ DICKS SPORTING GOODS

_____ KINNUCAN'S

_____ REI

_____ ALABAMA OUTDOORS

_____ L.L. BEAN

_____ ACADEMY

_____ GANDER MOUNTAIN

_____ SOUTHERN TRAILS

_____ OTHER - Please list all brands you have purchased in the last 12 months-

_____

_____

5. Please select all of the **brands** of outdoor performance clothing that you have purchased in the last 12 months.

_____ ARC'TERYX

_____ CABELA'S

_____ CARHARTT

_____ COLUMBIA SPORTSWEAR

_____ MAGELLAN

_____ MARMOT

_____ MOUNTAIN HARDWEAR

_____ NIKE

_____ THE NORTH FACE

_____ PATAGONIA

_____ REEBOK

_____ RUSSELL ATHLETIC

_____ UNDER ARMOUR

_____ WRANGLER

_____ OTHER – Please list all brands you have purchased in the last 12 months

_____

_____

6. How **much do you spend** on outdoor performance apparel annually?

_____ $0.00 - $250.00
_____ $250.00- $500.00
_____ $500.00- $750.00
_____ $750.00- $1000.00
_____ $1000 +

7. Please select all of the **types of clothing** that you purchase and use for the following activities.

Hunting:	Fishing:	Hiking/Climbing:	Canoeing/Kayaking:
____1/4 Zip Pullover	____1/4 Zip Pullover	____1/4 Zip Pullover	____1/4 Zip Pullover
____ Light Weight Fleece Shirts/Hoodies	____ Light Weight Fleece Shirts/Hoodies	____ Light Weight Fleece Shirts/Hoodies	____ Light Weight Fleece Shirts/Hoodies
____T-Shirts (short or long)	____T-Shirts (short or long)	____T-Shirts (short or long)	____T-Shirts (short or long)
____Button up Shirts	____Button up Shirts	____Button up Shirts	____Button up Shirts
____Polo Shirts	____Polo Shirts	____Polo Shirts	____Polo Shirts
____Sweaters	____Sweaters	____Sweaters	____Sweaters
____ Vests	____ Vests	____ Vests	____ Vests
____ Utility Vests	____ Utility Vests	____ Utility Vests	____ Utility Vests
____ Casual Pants	____ Casual Pants	____ Casual Pants	____ Casual Pants
____ Slacks	____ Slacks	____ Slacks	____ Slacks
____Cargo Pants	____Cargo Pants	____Cargo Pants	____Cargo Pants
____ Jeans	____ Jeans	____ Jeans	____ Jeans
____Shorts	____Shorts	____Shorts	____Shorts
____Outerwear Jackets Or Coats	____Outerwear Jackets Or Coats	____Outerwear Jackets Or Coats	____Outerwear Jackets Or Coats
____ Rain Jackets Or Outerwear Pants	____ Rain Jackets Or Outerwear Pants	____ Rain Jackets Or Outerwear Pants	____ Rain Jackets Or Outerwear Pants
____Sweatshirts	____Sweatshirts	____Sweatshirts	____Sweatshirts
____Sweatpants	____Sweatpants	____Sweatpants	____Sweatpants
____Base Layer Pants	____Base Layer Pants	____Base Layer Pants	____Base Layer Pants
____Base Layer Shirts	____Base Layer Shirts	____Base Layer Shirts	____Base Layer Shirts
____ Athletic Or Crew Type Socks	____ Athletic Or Crew Type Socks	____ Athletic Or Crew Type Socks	____ Athletic Or Crew Type Socks
____Wool Or Heavy Long Socks	____Wool Or Heavy Long Socks	____Wool Or Heavy Long Socks	____Wool Or Heavy Long Socks
____ Running Shoes Or Sneakers	____ Running Shoes Or Sneakers	____ Running Shoes Or Sneakers	____ Running Shoes Or Sneakers
____Work Shoes Or Boots	____Work Shoes Or Boots	____Work Shoes Or Boots	____Work Shoes Or Boots
____Other- _____	____Other- _____	____Other- _____	____Other- _____

8. Which of the following best describes the **size** you currently wear for **shirts**? Select all that apply.

_____ SMALL
_____ MEDIUM
_____ LARGE   _____ REGULAR
_____ X-LARGE
_____ 2X-LARGE   _____ TALL
_____ 3X- LARGE
_____ 4X- LARGE – 6X-LARGE

9. Which of the following best describes the **size** you currently wear for **pants (Including sweatpants, cargo pants, khaki pants, jeans, slacks)**? Select **all** that apply.

Letter Sizes:	Number Sizes – Waist Measurement			
_____ SMALL	__28-30	__37	__44	__51
_____ MEDIUM	__31	__38	__45	__52
_____ LARGE	__32	__39	__46	__53
_____ X-LARGE	__33	__40	__47	__54
_____ 2X-LARGE	__34	__41	__48	__55
_____ 3X- LARGE	__35	__42	__49	__56
_____ 4X- LARGE – 6X-LARGE	__36	__43	__50	__57

10. Which of the following best describes the **inseam measurement** you currently wear for **pants (Including sweatpants, cargo pants, khaki pants, jeans, slacks)**? Select **all** that apply.

_____ 28"
_____ 29"
_____ 30"
_____ 31"
_____ 32"
_____ 33"
_____ 34"

_____ Longer than 34"
_____ Don't Know

11. Which of the following best describes the **size** you currently wear for **outerwear (jackets, parkas, insulated vests, rain pants, coveralls)**? Select all that apply.

_____ SMALL
_____ MEDIUM
_____ LARGE
_____ X-LARGE
_____ 2X-LARGE
_____ 3X- LARGE
_____ 4X- LARGE – 6X-LARGE

12. Use the visual scale below and identify which of the images best represents your current BODY SHAPE.
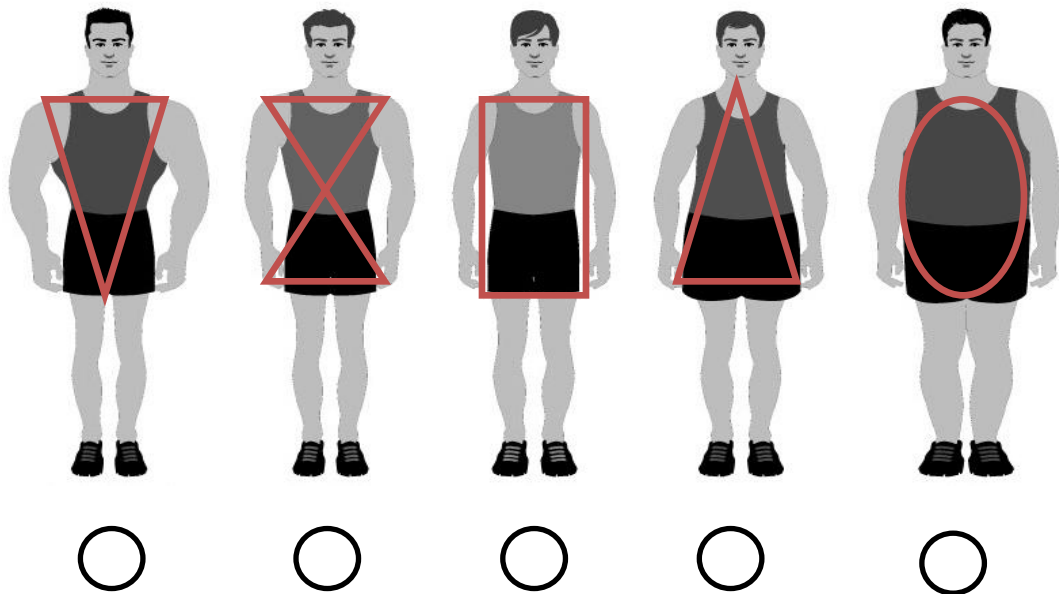
13. Use the visual scale below and identify which of the images best represents your current BODY SIZE.

BODY FAT

MUSCULARITY
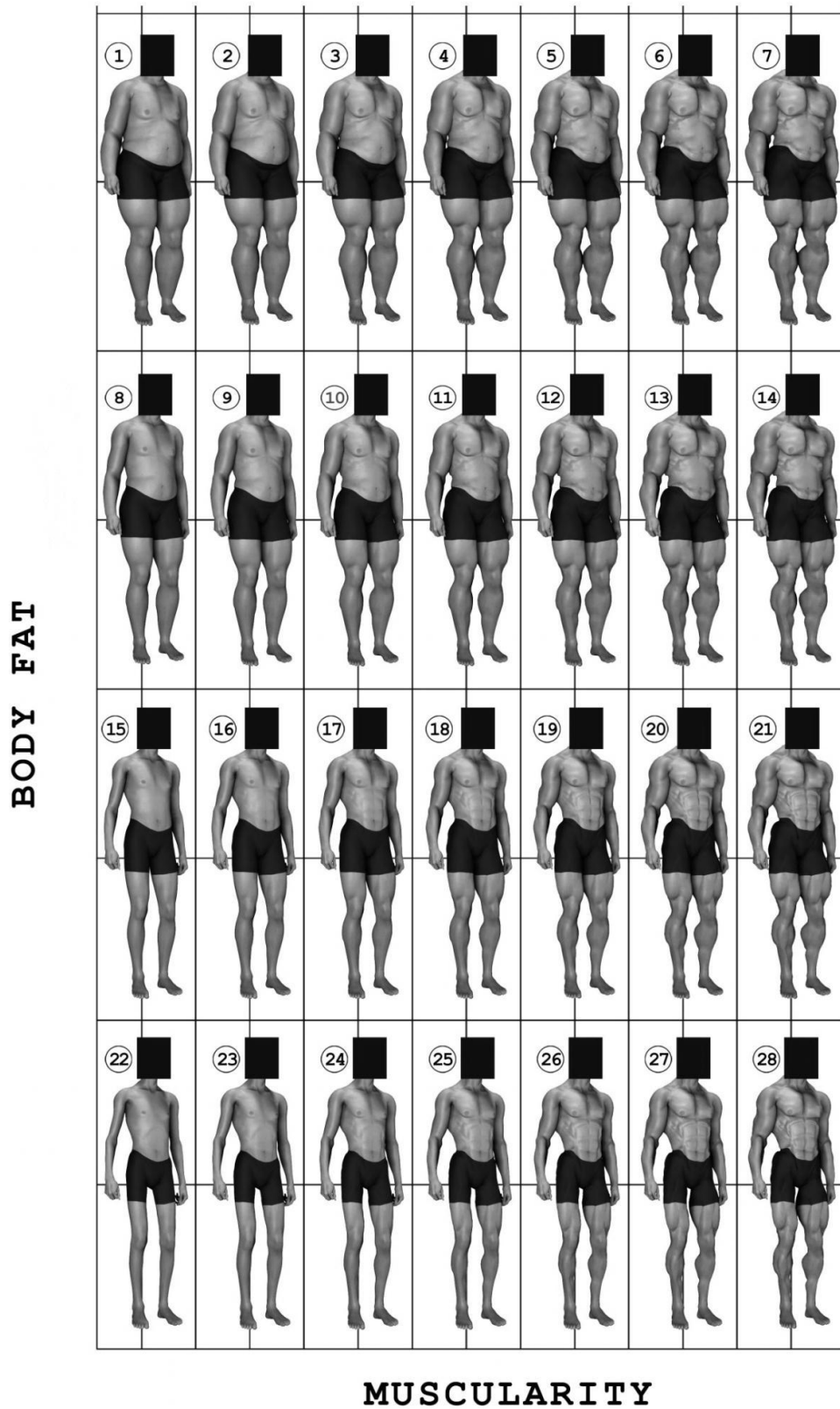
14. Indicate below which body area characteristic best describes your current body.

A.

Small Calf Size   Normal Calf Size   Prominent Calf Size

◯   ◯   ◯

B.

Small Bicep Size   Normal Bicep Size   Prominent Bicep Size
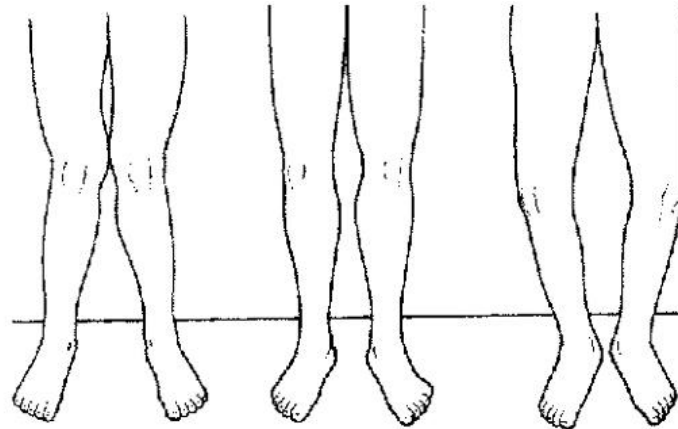
◯   ◯   ◯

C.

Stooped Posture   Average Posture   Erect Posture

◯   ◯   ◯

D.

Knocked Knees   Normal Stance   Bow Legs
○   ○   ○

E.
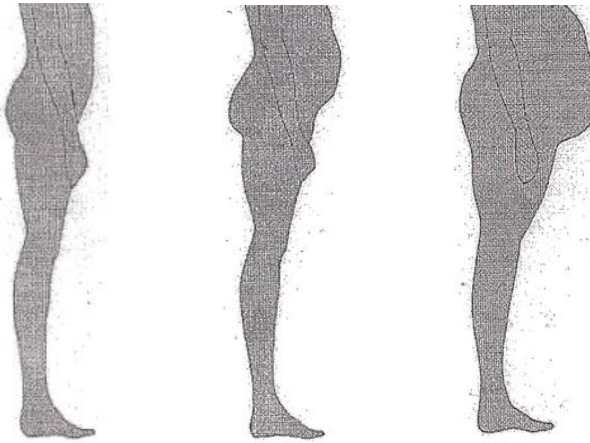
Flat   Medium   Prominent
Abdomen   Abdomen   Abdomen
○   ○   ○

F.
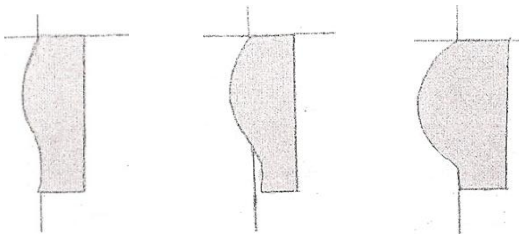
Flat   Medium   Prominent
Buttocks   Buttocks   Buttocks
○   ○   ○

Directions: Please answer the following demographic questions.

15. Please report your current **Height.**

    Height: _____ feet _____ inches

16. Please report your current **Weight.**

    Weight:_____ pounds

17. What is your **age?** _____ years old

18. What is **the highest level of education** you have completed?

_____8TH GRADE OR LESS
_____SOME HIGH SCHOOL
_____HIGH SCHOOL DEGREE
_____SOME COLLEGE OR TECHNICAL SCHOOL
_____COLLEGE DEGREE (4 YEARS)
_____SOME GRADUATE SCHOOL
_____GRADUATE DEGREE (MASTER'S, DOCTORATE, ETC.)

19. Which of the following ranges includes your total annual household income

_____	UNDER $5,000	_____	$5,000 TO $9,999
_____	$10,000 TO $14,999	_____	$15,000 TO $19,999
_____	$20,000 TO $24,999	_____	$25,000 TO $29,999
_____	$30,000 TO $39,999	_____	$40,000 TO $49,999
_____	$50,000 TO $59,999	_____	$60,000 TO $69,999
_____	$70,000 TO $79,999	_____	$80,000 TO $89,999
_____	$90,000 TO $99,999	_____	$100,000 TO $124,999
_____	$125,000 TO $149,999	_____	$150,000 TO $199,999
_____	$200,000 TO $249,999	_____	$250,000 OR OVER

20. Which of the following **ethnic groups** do you consider yourself to be a member of?

_____AMERICAN INDIAN/ALASKAN NATIVE
_____ASIAN/PACIFIC ISLANDER
_____HISPANIC
_____NON-HISPANIC BLACK
_____NON-HISPANIC WHITE
_____OTHER (Please specify: _____)

Thank you very much for your participation!

APPENDIX D

Additional Analyses of Men's Preferences for Outdoor Performance Clothing

Function

Content analysis reveals that function emerged as the most prominent theme overall. Men were able to more easily communicate aspects of functionality of their clothing than they were able to recognize fit issues. As one man stated, "…If I'm listening to everybody right, the main thing for clothing to me is the functionality of it… of course that's different for everybody but.... It's the functionality of it." Seven prominent sub-themes of function emerged from the discussions and will be discussed.

Breathability/Wicking. Breathability and wickability were two sub-themes that were mentioned numerous times when discussing activities during the warm months. The men wanted the fabric to be breathable and the design to incorporate elements of breathability:

Something breathable."

"More breathability is going to be good, but that'll just come with technology."

The men wanted the sweat to wick away from their bodies and dry quickly. Temperature control while performing the outdoor activities was essential so that they did not become too hot or too cold because of sweat. Exerting energy created sweat and the men wanted clothing that can wick away the excess sweat:

"Quick drying. Quick drying is probably quite important."

"Something that's moisture-wicking during the summer. [all agree] That's a big thing…"

"I would say definitely moisture for like hiking and stuff, and probably paddling. Moisture wicking would possibly be, yeah for that. Yeah moisture wicking and then maybe for hunting in my opinion maybe water resistant for scent lock ya know."

"They have to have breathability as well because generally if I am out in the rain, I am not just sitting there in the rain. So I am producing a fair amount of, well I mean even you, riding horses, which is not a low impact exercise. So you are producing moisture yourself, and that has got to get away from you."

Durability. Durability was often the reason given for why they preferred a brand or a type of clothing. They wanted clothing that would last them through their seasons and could be used the following year. They were concerned with the function of their clothing. The following statements exemplify the desire for durability of their clothing:

"I like Carhartt, the durability when you talk about Carhartt. It's probably going to last."

"It's gotta be durable for you. For him it's gotta be durable."

"[Moderator: So functionality is a big thing.]
Nine: Durability, how long it's going to last"

Durability also incorporated the quality of the fabric and the construction of the clothing. Two men shared their preference for quality in different forms:

"Moderator: What about Carhartt's? What do you like?
Three: Quality, and the durability of the material and the fabric."

"Basically the quality and the construction of the materials, you know the duration of how long it would last I guess. You know like it starts falling apart and stuff, so…"

Along with durability, the men stated they needed extra reinforcement in specific areas because they were often ripping their pants while performing activities. They needed a thicker more durable fabric at the pockets where they keep different accessories clipped:

"For me it's like, I kind of mentioned this earlier, but reinforcement right along where the seam of the pockets comes down to meet the seam of the pants. That always rips on me. Just from like clipping stuff to it or putting my hands in and out of my pockets, it just comes loose." [Moderator: You're pockets rip off after a while.] " Yeah."

"But, I guess even if they put just a small piece of leather on each side, that would keep your pants from fraying. I know a lot of people are wearing knives clipped on their pants now so."

Fabric. The fabric of their outdoor performance apparel was discussed frequently for many different reasons. The men shared likes and dislikes of different fabrics, but overall they needed fabric that was comfortable.

The men wanted durable fabric that was thick enough to protect their skin while outside. One man stated his preference for fabric for his pants:

"Depending on what you're, like he said, he said a while ago, when you out walking in briars and timber, you gonna need (protection) from these briars. You gonna want something that's gonna, you don't want a thin pair of pants on cause it's just gonna be like walking out, going out in your underwear. I mean your legs are scratched up and all of that, you know."

The men did share discomfort when the fabric of their clothing rubbed against their skin and created chaffing. An example of this issue is illustrated for hiking pants:

"I think like with hiking and stuff, like the quality of the material is pretty important. Especially around the waist belt. I usually like them in a swim suit and stuff like that. If the material is real course and stuff...But if the material is softer and better then it's nicer. Of course it's part of the hiking thing as well."

The men desired fabric that was functional, but would not absorb and hold odor. Two men state their frustrations with specific brands and odor:

"You know, I guess it's just pulling my sweat you know from my body. That's fine, but you know. That's a deterrent for me. I won't buy any Under Armor or Wicking shirts anymore because I don't want to smell bad."

"I think one thing about performance shirts that I've noticed, maybe it's just me, but if you wear like an Under Armor or Wicking shirt, it smells horrible. Even like the polo dress shirts. Like I'll wear it throughout the day working, and I have an office job, and I come in and out and awful lot, but just in the office all day. It smells horrible."

Other single comments were made concerning ScentLock for hunting, shrinking of clothing, windproof fabrics, applications of SPF and other repellents. The men noticed the importance of the correct fabrics for their outdoor performance activities and thus were very vocal.

Lightweight. Lightweight emerged as a sub-theme apart from Fabric and Breathability because the men stated repeatedly that they wanted lightweight fabrics and lightweight garments. They wanted thin fabric that will either breathe or keep them warm. The men were accustomed to living in warm climates and found they did not have a need for warm thick outer layers. They wanted thin lightweight layers for their climate. When asked about functionality of their outdoor performance clothing, multiple men stated their preference for lightweight pieces:

"Lightweight, it's gotta be lightweight."

"Really thin fabric."

"I feel like I'm just wasting my money. If I get one I'll wear it [jacket] a week and then it's hot."

"Light. Lightweight."

Versatility. The men shared the desire to be able to wear their outdoor performance apparel for multiple activities and different situations in their lives. When the moderator asked the group, "So going back to wearing it multiple places and things like that. That is what you're

looking for?", the entire group agreed. One man shared his preference for versatility when asked about overall preferences of outdoor performance apparel:

"I enjoy to be in style. Especially something you can wear doing regular activity and social activity but also something you can wear to hang out at the hunting club or whatever. Not necessarily maybe hunt in it, but you know."

They also wanted clothing that could be versatile for different temperatures/climates. For example, one male commented:

"I love em for the simple fact that they just have the quarter zipper. And that gives you, if you're out and the wind is blowing, you know like when we talked about a while ago the collar, you can zip it. You know you can pull it up and keep the wind from going. You can just zip it down and it's loose. But like vs. the whole zipper thing. Just (motions up and down) there is not any way. It just gives me more flexibility."

One man shared his preference for versatility in the sense that the garment was very functional:

"I also like Duluth Trading. They are very similar to 5.11. Lots of easement, lots of reinforcement, gussets, air for the back, you can do a lot of moving around in them. Reaching, and things like that. It has a lot of give and versatility."

Comfort. Though the frequency of comfort was only revealed 15 times, the sub-theme was important to the men and was the reason why they often liked or disliked a specific garment style. They would simply state: "And it's comfortable."

The following comments exemplify the need for comfort during the outdoor activities:

"When you sitting in this chair, or you sitting in whatever you know, or you out working, or hunting, there again. If you are uncomfortable hunting, you're going home. Or you're a crazy one. I guarantee you when you get up to my age, you'll learn that."

They wanted to enjoy their outdoor activities and be comfortable while active. They did not want to be uncomfortable for hours at a time while outside.

"I think functionality goes back to what you are doing specifically. If you're out in the woods all day you need something that is comfortable."

Comfort and the amount of money spent on the clothing were related. The men often

bought for comfort and found it more important than the price. A few of the men stated:

"Everybody wants to save money, but you're going to pay. I'm gonna pay whatever I have to pay to be comfortable. It's all about comfort to me."

"Those are the two most important things. Price and comfort. You're not going to pinch pennies to be comfortable."

"That's why I buy what I buy. To be comfortable and all that."

Movability. The men expressed strong preferences for clothing that they could easily

move in for outdoor activities. The clothing needed to fit them, but more importantly, the

clothing needed to be comfortable while moving. The following statements share these findings:

"Movement. Movement, like how much the clothes allow you to move. Sometimes you are doing a lot more physical activities."

"Sometimes a lot has been cut too, so like when you're sitting up, standing up there is something awkward about it. Not even not necessarily just a fitting thing, it's just a movement (issue). I don't like the way it feels moving around."

They also did not want clothing that was bulky or cut small to prevent range of motion:

"I don't like, I just don't prefer nothing bulky. It may be warmer but if I can't move in it, just you know, I don't want it."

"[Range of motion.] That's a big one."

Table 22

Frequency Counts for Function Sub-themes

Sub-themes	f (N=317)
Wicking/ Breathability	87
Durability	61
Fabric	48
Lightweight	32
Versatility	24
Comfort	15
Movability	12

Design Details

Design details emerged as a theme because many comments were made in relation to a specific accessories or details that were added or missing on a garment. It sometimes related back to the fit of the garment, but often the statement was directed at the function or the detail not the fit. Many times statements coded as design details were also coded as fit and/ or function. The following sub-themes will be discussed further with example comments.

Pant Hem Adjustability. For outdoor activities, the men liked the ability to zip and unzip the side seam of their pants to dress or undress. One man stated:

> "I like the zipper. [Moderator: You like it to zip up the side seam?] "Yeah. It's really nice to be able to throw on a pair of pants over shoes or whatever."

The men also liked the zipper on the side seam for temperature control. The men would get hot later in the day and liked to be able to create ventilation in their pants:

> "Yeah, I like that too, because tis gets hot, and if you get warm you can always unzip that rather than taking the thing back off. ..."

> "I think that is the difference between six inch and eight inch zips, where it is really easy to get it off. And then I've worn pairs like that with the zipper in the summer, and then in the warm weather you can unzip it, then roll that pant leg up above your knee. And it really helps shed a lot of excess heat that way."

The adjustability to the circumference of the pant hem was also important. It enabled them to tighten the hem around their ankles and boots to keep them protected and warm. Two men liked the ability to tighten the hem of their pants:

"But sometimes having a button at the end of the zipper, so that once it's zipped down, the stretch is off of the zipper. Then the zipper isn't coming back up. It's very useful."

"It just kind of folds down to one and that's it. So I like it to be close around the boot. So again there's an adjustment or rubber or whatever to close that gap. That would be nice."

Shirt Sleeve Adjustability. When the focus groups were asked about performance button shirts, many spoke about the adjustable sleeves. There was large discussion of this design detail and thus the high frequency count. There were both positive and negative feelings towards the design detail. Many of the men said they either would not ignore the added detail or take it off the shirt:

"I never use that. I just roll em up."

"I would say probably the first thing that gets popped off would be that button."

Most of the men found the button and flap annoying when the sleeve was rolled up and rolled down. The sleeve would stop at an awkward place on the arm when the adjustment was used.

"Well, dress shirt because I've always got real long, well I usually roll up once or twice. Just never really having to wear them. I'm not used to them. Even in the service we all learned how to roll up our sleeves, and they would stay up. That to me is a nuisance."

"The only thing I don't like about it, other than maybe having a button up here (points above the elbow), is when you roll it up you just sort of feel like you have to roll it up at a certain interval to make it match where it is. Sometimes it's too low. Then as you wear it, see how it has started to droop, it looks so sloppy because it's so short on one end. So I don't know. I prefer to roll mine even so that it's just one line across. So maybe more of

an appearance thing than a functionality, I guess. Other than the obscure button on the other sleeve it doesn't really make sense."

Other men found the adjustability helpful and functional. Two men stated their strong liking for the added detail:

"That's the best thing ever. [sleeve with button]"

"The ones that don't button always come down on me, but those [pointing at Three's shirt] I really like."

Shirt Collar Adjustability. Discussion of adjustability of hems, sleeves, and waists sparked the conversation for neck circumference adjustability.

"... And I said just like in the adjustable waist band pants, the neck would be great if just somehow you had that little bit of pull. IT would be great because if you go up a size to get the neck to fit, then the shirt don't fit like it should be."

When the focus groups were asked, the men said they did not have fit issues at their neck for performance shirts. They said they did not button the top button of their performance button shirts and thus there was not an issue. But the men did say they thought adding stretch (elastic) would be a good idea:

"[Moderator: Ok. So you want some stretch or some adjustability there?]
One: That is definitely one thing they could do to a shirt."

"Like he was saying a little while ago, why can't you have the little piece of, you know, the little piece of adjustable (pointing to neck). So when you pull it, or do that (pulls two front pieces of collar together), or you gotta put a tie on. You know you put the tie on, and then there you are (makes gesture of collar choking him). And that's it, but you know with a little bit of, you know."

Cuff Adjustability. Cuff adjustability was found to be very important to the men because regular cuffs were either too tight or too large One man stated about regular sleeve hems, "Too tight half the time."

When the groups were asked if they liked adjustable cuffs on shirts and jackets, the entire groups agreed. They wanted to be able to manually tighten jacket cuffs around their wrists instead of having cuffs with only elastic. Elastic tends to ride up and bind the body as the men are active. The men liked buttons and Velcro to adjust the cuffs:

"I like the ones that have more than one button because you can choose"

"I have a jacket that can adjust the size of this [holds wrist]. It's a Velcro thing. I wish there was something about shirts that had the same thing, honestly. Because most of my shirts, they're too tight and I can't put my hand through, or like I have a hard time fitting it and they're just too loose. So maybe an adjustment that you can do after you put it on. That would be nice."

Shirt/Jacket Hem Adjustability. As with the other adjustability sub-themes, shirt/jacket hem adjustability was found to be very popular across the four focus groups. The men did not like elastic hems of jackets because the hem would come up and become bothersome:

"I don't like the elastic band...Because if you go to reach for something, everything pulls up."

"I usually don't like elastic, especially in my jackets like that."

"Yeah even if it doesn't have the adjustment it would be nice with the elastic on the bottom that holds it. But some elastics are bad because they stretch after two or three washes and then it's just open. So the tighter it is I think the better."

They liked to be able to manually adjust the hem of their jackets with a cord and cord lock:

"I don't like the elastic at the bottom. I find that when you start to lift up that elastic starts to ride, and then after a while I am wearing my jackets up here (points to rib cage area). Like you're not gonna want to keep pulling the thing down. I like the ones, like he was saying, with the pull cord in the middle or all the way down so you can adjust that on your own, whereas the elastic just comes around you as soon as you zip it up. Then it just starts to rise."

"Moderator: And you like that to where you adjust it yourself? "Yeah.... Mine is draw cord at the bottom."

Hood. When discussing jacket preferences, men stated that the hoods on jackets can often be more of nuisance than an added feature. Men only like using a hood on their jackets if the hood had adjustment features. One man stated:

"I like to adjust it with mine. I have two little straps and I can just adjust it."

The men also preferred jackets with removable hoods from the body of the jacket. Two men liked either removing the hood completely or folding up into the collar of the jacket:

"But it has a place where you know the hood can come off. It's a button kind of thing. So it's nice to have that option. If it's windy that day, you know you can just pop the hood in and out it on. Then when it starts to cool off you can take it off in the summer. So that's kind of a neat feature."

"I've had a coat one time, it's interesting. In the collar, it had a zipper and it had a hood inside. Then if you got in a situation like that you could unzip it and pull it over your head. But I'm just, again I'm not gonna wear nothing on my head bothering me."

The bulkiness of the hood when not in use is annoying when preforming activities. Often the hood would move and not stay on their heads and thus block their vision or become annoying. Two men shared these issues:

"To me, if you hunt, you're limited. Then I can't hear like I should. You gotta then turn your whole head to see and ya know. With the hood, I don't like those. I'm not gonna wear one."

"But yeah, some of them just does, even my own rain jacket I brought today, just doesn't stay in place as good."

Shirt Seams. When discussing the fit and comfort of performance t-shirts, the men stated that the placement of the seams do matter. The raglan type sleeve with the diagonal seams on the chest were more comfortable than the seams around the armpit and across the shoulder (traditional set in sleeve). The raglan seams allow for more range of motion and comfort:

"One: Yeah it comes from here that way (pointing in chest area), you know diagonal. It's got the diagonal on the sleeves. I prefer that in a t-shirt."

"[Moderator: Ok. Do you feel like it fits better? It lets you have more range of motion?] "Yeah, I don't like the sleeve that comes here (points across is shoulders), I like the diagonal one. It just seems like it is more comfortable"

One man stated that he liked shirts with flat seams. The placement was not a priority, as long as the seams lied flat on the body:

"I like flat seams. The ones with the little notch up under it where it comes together? I don't like that. I like the flat seam stuff. As far as placement goes, I never really notice."

Table 23
Frequency Counts for Design Details Sub-Themes

Sub-themes	f (N=248)
Pant Hem Adjustability	55
Shirt Sleeve Adjustability	42
Shirt Collar/ Adjustability	31
Shirt/Jacket Hem Adjustability	25
Hood	25
Cuff Adjustability	18
Shirt Seams	12

Pockets

Pockets emerged as an independent theme from design details because the amount of comments and types of comments were numerous. The men had much to say about the size, placement and closures of pockets.

Size. The men stated that the pockets were not deep enough for their hands to rest and to carry the things they needed outside. One man commented:

> "I would say make sure that the pocket is deep enough. If there is a pockets, there is no sense in having a shallow pocket."

The opening of the pocket was often not large enough for their hands to easily fit through:

> Moderator: "So maybe the opening is too small, but the actual pocket is to large in side."
> "Right."

Closures: The men wanted pockets that would close with a zipper, Velcro or a magnet. They said they were annoyed when they bent over to perform a task or sat down and the objects in the pocket would fall out of the pocket. The following was stated:

> "When you put something in the pockets and you lean down to do something and everything falls over. I hate that."

> "Like when you sit down you don't have to worry about anything falling out of your pocket."

> "I have some with zippers. They're pretty nice. Like when you sit down you don't have to worry about anything falling out of your pocket."

Placement: The men preferred pockets on their upper bodies rather than on the lower body (pants). Pockets are needed on the pants, but men do not want large pockets on their legs because they become bothersome and baggy. Men prefer large pockets on the upper core of their body for outdoor activities:

"I mean, the way I always do it is you want to keep the weight that you're carrying more towards your core, like around your hip area. And so when they have like cargo pockets and stuff like that, you know you can't actually put anything decent in there because when you're walking it's just going to be slinging around down there by your knees..."

"I prefer just a basic, just the basic regular pants. You know with just regular pockets on it. And you know I don't like anything on my legs. Pockets on my legs or anything like that. And it's just uncomfortable to me."

"Well, again, anything around the knees, like with big pockets or zippers, when you start leaning down, squatting or anything like that, when they ride on my knees I don't like that."

The men want their shirts to be as functional and easy as possible for outdoor activities. They like the use of a vertical opening pocket and a horizontal opening pocket on their shirts to hold different types of things:

"Yeah I was going to say something about pockets. Recently I've gotten some hunting shirts that have the pockets that go this a way (pointing vertically down his chest area), and they have zippers on them and they are extremely roomy pockets. Just well made."

"I love the zipper right here [indicates chest], because I always just… I'm slipping my phone in and out, and it's zipped, and I know it's safe. I think it's easier to bump into things down low with your phone in your pocket, especially if… I mean so many people carry iPhones and stuff like that, I feel like they're a little more fragile. But up here [chest], it's a little more protected."

One man suggested creating a pocket that was diagonal across the front of the upper body to eliminate the need for a zipper:

"... I haven't seen one, but even if it was across (the body) as long as it has some sort of closure. You will move, or just step over a log or turn sideways and if it doesn't have zippers anything will just fall out."

The men also liked small pockets on the sleeves of the tops for small accessories. One

man found the small pocket very useful:

> "I have this one quarter zip that has a pocket on the sleeve. I really like that because if
> you aren't taking your wallet with you, you can just throw some money in there. And
> bring your id and your phone. [another nods]"

Table 24
Frequency Counts for Pocket Sub-themes

	f
Sub-themes	(N=148)
Size	66
Placement	45
Closures	37

Layers

Layering outdoor clothing enabled the men to regulate their body temperature and remain

comfortable during their activities that last many hours. The men want clothing that is thin but

warm, easy to take off and store in the heat of the day, and loose enough to fit over their other

layers. Two man comment on the advantages of layering for hunting:

> "Turkey season is a good time to, because a lot of times in the morning it's cold when
> you go out there, but by God you get out to one (o'clock) and you have to walk, walk,
> walk, walk, you chasing them and then the next thing you know you got your coat tied
> around your waist and you have rolled your sleeves up and all that. If you have got a long
> sleeve shirt on that's thin, but it's comfortable I mean that's the life. I like that a lot better
> than having to wear all that other stuff."

> "Yeah I'm more or a layering (guy), that's how I keep warm. Plus as the temperature
> rises during the day, you're out ya know hunting or fishing and then you can un-layer."

Thin and warm. The men want garments to be as thin as possible to reduce any

unnecessary bulk but also provide enough warmth. As one man states: "As thin as possible, but

something warm [agreement from group]".

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The other men share their preferences for layering to reduce bulk:

"Personally I'm a layer person. I'd much rather have a t-shirt and a long sleeve little shirt and may be a sweat shirt or something than if I had to have a big bulky coat on." (1,1)

(I do layers. I'll do two or three. A base layer and something thinner on top of that."

The men also were concerned about fit of their layers. "[Moderator: Are they fitting over your clothes? Do you find that the jackets fit you?] "That's important."

Looseness. The men noticed the importance of layering the appropriate pieces together and therefore eliminated incorrect fit of layers as much as possible. They would often buy a size larger to ensure that the top layers fit comfortably over the base and second layers:

"Number one (on the Power Point), well those are Carhartt's, but I have the bib Carhartt's like that and they are great. And I had to get them bigger than I usually get to wear them over a pair of slacks or something like that. It's no problem."

"Yeah, I generally like mine a little larger because if it's colder I'll just put a fleece on underneath whatever it is. It's nice to have a little extra space to do a layer."

The men desired looseness of their clothing especially in the arm areas. They wanted the ability to move and not be restricted:

"With some it's like, right where the sleeves start [at shoulder] it should be a bigger cut to go over something—like if you're wearing a bulkier underlayer. I just feel like you get restricted when you're moving your arm."

"Like, it's tight under the arms, like depending… Like if you're trying to put like a thick fleece jacket under the rain jacket it would probably be tight. But you've got to go thin fleece… It's just about using the right stuff together."

Table 25

Frequency Counts for Layers Sub-Themes

Sub-themes	*f* (N=84)
Thin And Warm	48
Looseness	36

Sizing

The theme sizing had been discussed above in relation to BMI and height to answer two of the three research questions. Additional sub-themes were discovered that were not affected by BMI or height. The men discussed their opinions of number sizing and letter sizing. Availability of sizes emerged from participants sharing frustrations over not being able to find their size in stores. This was not a fitting issue but more about purchase availability.

Number sizing. Some men stated that the numbers ensure a better fit because you have actual measurements to compare to: "I like numbers just because you get a better fit."

While other men stated that numbers were too complicated and prefer letter sizing: "Oooooh, I feel like when you start putting numbers on it, you start getting into a lot of different sizes. At least, for guys, its more basic, we aren't really shoppers so it makes it easy on us really."

Letter sizing. Letter sizes were more convenient for men and were appropriate for outerwear clothing because of the loose fitted nature of the clothing. The men are not as concerned with fit for the outdoor performance apparel. For outerwear pieces, one man preferred letter sizing:

 "For outerwear letter sizes work fine with me. In most of them they have letter size, they have letter size plus tall."

The men repeatedly stated that numbers are needed for business apparel, while letter sizing is acceptable for outdoor performance apparel. The men wanted their business clothing to

fit perfectly in all areas and thought the number sizing would provide a better fit with their actual

measurements. For loose fitting clothing, the men found letter sizing to be appropriate:

"I like it if everyday clothes just put a letter, its ok I wear a large, so it's go get a large. But if I am going to go to a presentation or go to a party or dress up nicer, I need something that fits me this particular way. Number system I find helps a lot better because then I know I'm a 17 whatever, and then I can get a better fit that way when I need to look better. Whereas everyday clothes, letter size works."

"I think it's [outdoor performance clothing sizing] actually less important. If I buy the wrong collar size, it could be bad. And changes in my size make a big difference when I am buying those types of things. Outdoor apparel you generally buy so that it's not tight fitting anyway really."

Table 26
Frequency Counts for Sizing Sub-themes

Sub-themes	f (N=22)
Number Sizing	14
Letter Sizing	8

Price

Price emerged as a theme because it was an important aspect of shopping for the men.

Affordability often determined which outdoor performance apparel they were going to purchase.

When affordability was the most important aspect, men said things such as, "I try to balance it

between what's on sale." and "That's the thing with clothes, with this is price range and cost.

That's what it all boils down to with me."

Other men looked for quality and durability first. If the piece was more expensive, then it

was evaluated for quality and durability**.** The men were willing to spend the extra amount if they

were getting something that would last. When the moderator directly asked one man if quality

was deciding factor the man answered, "Yeah, I'm willing to pay the price if I think it's the right

thing. So, buy it once and that's it". Another man stated, "Price is a big thing, but if it's good I'll

pay the price. If I think it's good".

Table 27
Frequency Counts for Price Sub-themes

Sub-themes	f (N=12)
Affordability	12