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# CARDIOVASCULAR AND MUSCULAR RESPONSES TO EIGHT WEEKS OF RESISTANCE EXERCISE TRAINING IN YOUNG AND OLDER WOMEN

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CARDIOVASCULAR AND MUSCULAR RESPONSES TO EIGHT WEEKS OF RESISTANCE EXERCISE TRAINING IN YOUNG AND OLDER WOMEN

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# Abstract

PURPOSE: Resistance training is recommended for all adults of both sexes. The time-course of muscle hypertrophy in young and older women and the arterial stiffness and limb blood flow responses to resistance exercise in young and older women remain to be elucidated. The purpose of this study was to examine the time-course of muscle hypertrophy in young and older women following high-intensity resistance exercise training as well as to examine arterial stiffness and blood flow responses in young and older women to high-intensity resistance exercise training. METHODS: Young (aged 18-25) and older (aged 50-64) women performed full-body high-intensity resistance exercise three times per week for eight weeks. This exercise was performed on six different exercise machines: leg press, chest press, leg extension, shoulder press, leg curl, and lat pull-down. Exercises were alternated so that two lower body exercises or two upper body exercises were never performed together. As the exercise program was meant to be of a high-intensity, subjects began lifting at 80% of their one repetition maximum and training progressed by having subjects perform three sets with ten repetitions performed in the first two sets and the last set being performed to “failure” which was defined as the inability to complete another repetition with good form. All exercise was supervised and performed in the laboratory. At two time points approximately three weeks apart, prior to training, measurements were performed as a control period and no exercise was performed between these measurements. A single post-testing measurement was performed following training. At these three measurement time-points, the following measurements were performed: ultrasound muscle and fat thicknesses at eight body sites (50% and 70% thigh and hamstring, subscapular, chest, deltoid, and –fat only– visceral), thigh circumference, four 50% thigh skin-folds (anterior, posterior, lateral, and medial), whole body dual energy x-ray absorptiometry, carotid to femoral and femoral to tibialis posterior pulse wave velocity, blood pressure, heart rate, resting forearm blood flow, forearm reactive hyperemia, and two functional assessments (an upper and a lower body questionnaire) were performed. Additionally, once every week, the aforementioned ultrasound assessments of muscle and fat at seven and eight sites (respectively), thigh circumference assessment, and four thigh skinfolds were performed. Also, once every two weeks, strength was assessed on each machine by one repetition maximum. Upper body strength was assessed on the second training day of the week and lower body strength was assessed on the third training day of the week. Data was analyzed with ANOVAs and post-hoc t-tests. Alpha was set at $p<0.05$. Pre values were averaged and the average was used for subsequent analysis if no difference between these values was found. RESULTS: Muscle thickness for all muscles, except at the subscapular site, was found to increase significantly ($p<0.05$) over time. The first increase in muscle thickness was seen at the 50% quadriceps, 50% hamstrings, 70% hamstrings, and deltoid sites followed by the 70% quadriceps and chest sites. Group differences ($p<0.05$) were found for the 70% hamstring site only. Carotid-femoral pulse wave velocity showed a significant ($p<0.05$) group effect only with older subjects having a higher carotid-femoral pulse wave velocity than younger subjects. No significant ($p<0.05$) effects were found for femoral-tibialis posterior pulse wave velocity or for resting forearm blood flow. A significant ($p<0.05$) interaction was found for peak forearm blood flow. Total hyperemia increased significantly ($p<0.05$). Total body mass (kg), total % fat, leg % fat, bone-free lean mass of the arms (kg), bone-free lean mass of the legs (kg), functional scores, and strength all increased significantly ($p<0.05$) over time. Fat thickness decreased significantly ($p<0.05$) over time at all sites except the chest and subscapular sites. CONCLUSION: In conclusion, an increase in muscle thickness occurred early in training and followed a similar progression in both groups of women. Thus, young and older women had similar muscular responses to the training. Also, eight weeks of high-intensity resistance training improved microvascular forearm function while not changing carotid-femoral or femoral-tibialis posterior arterial stiffness. These vascular responses to training were the same for young and older women with the exception of the greater peak forearm blood flow (non nitric-oxide dependent) response in the older compared to the young women.

# CHAPTER I: INTRODUCTION

Resistance training is recommended for both men and women, young and old as a method of increasing strength, improving risk factors for both cardiovascular and metabolic diseases, and improving quality of life both psychologically and physiologically [1]. Although recommended for a wide range of people, the majority of research on resistance exercise has been performed on young men. Although current evidence suggests that the relative quantity of hypertrophic responses do not differ between men and women [2] and that young and older women possess the same relative capacity for hypertrophy [3], information is lacking in specific areas in which younger and older women have not been uniquely examined. Specifically, the time-course of muscle hypertrophy in young and older women has not been well-examined. Also, any change in arterial stiffness and microvascular blood flow following resistance training in young and older women has not been well-studied.

**Time-Course of Muscle Hypertrophy**

Initial strength increases with resistance training are typically attributed to neural gains as hypertrophy is commonly thought not to occur until six to seven weeks of training [4]. Recent work has challenged this idea. Seynnes et al. [5] found increases in quadriceps muscle hypertrophy following twenty days of training in seven recreationally active young men and two women. DeFreitas et al. [6] observed an increase in muscle cross-sectional area (mCSA) in twenty-five young men as measured by peripheral quantitative computer tomography scan after just two resistance exercise training sessions. DeFreitas et al. [6] acknowledged that this initially observed increase in mCSA may have been influenced by an acute post-exercise muscle swelling effect so they concluded that skeletal muscle hypertrophy appears to occur around three to four weeks of training.  However, later work by Poole [7] has suggested that thigh size in young men returns to baseline levels within twenty-four hours following an intense lower-body resistance training session.  This work suggests that DeFreitas et al. [6] may have seen true hypertrophy after the two resistance training sessions as the mCSA measurement was taken approximately forty-eight hours after the last training session.

A major strength of the study of DeFreitas et al. [6] was the performance of weekly hypertrophy and strength assessments.  To date, no other study has performed such frequent assessments in analyzing the time-course of muscle hypertrophy.  Also, to my knowledge, the time-course of muscle growth in a large group of women has only been examined in one study to date [8].  This study used ultrasound to assess muscle thickness every two weeks in twenty women (aged 25-50 years) resistance training three times per week for six weeks.  Abe [8] found increases in upper body and hamstring muscle thickness after four weeks of training.  Although a wide age range was used, this study did not compare women by age.

Cannon [3] showed that young (aged 20-30 years) and older women (64-78 years) were capable of similar hypertrophy and strength gains after ten weeks of resistance training.  It has also been shown that men and women are capable of hypertrophying to the same relative extent following resistance training [2].  Studies comparing the responses of young and older men and women to resistance exercise training have found a variety of responses:  no difference in response between groups [9,10], less hypertrophy at certain sites in older individuals [11], and less hypertrophy in older men but not older women compared to younger men and women [12].  All of these studies measured responses at baseline and following training. A study with more frequent measurements of muscle size has not been performed with the exception of the aforementioned study by Abe et al. [8]. Thus, a study comparing the time-course of skeletal muscle size increases in younger and older women following resistance exercise training would provide novel knowledge.

**Women's Arterial Stiffness and Blood Flow Responses to Resistance Exercise**

Few studies have examined the arterial stiffness response to resistance exercise training in women [13-21] and no study to date has directly compared the arterial stiffness response to resistance training between younger and older women. The arterial stiffness response to resistance exercise training has been found to vary with some studies in women showing no change [14,15,18,19], some showing an increase [13,22], and some showing a decrease [16,20,21] in arterial stiffness following resistance exercise training.

Cortez-Cooper et al. [13] found an increase in carotid augmentation index following eleven weeks of high-intensity resistance training in young women. Other studies showing no change in arterial stiffness suggest that the findings of Cortez-Cooper et al. [13] are due to the high-intensity nature of their training program and that high-intensity resistance exercise may be detrimental for the arterial health of women. Although this is a possibility, it is very important to acknowledge that Cortez-Cooper [13] also saw a significant increase in carotid-femoral pulse wave velocity (PWV), the currently accepted most representative measure of central arterial stiffness [23], in *both* the resistance training and the non-exercising control group. Thus, it is questionable whether this study truly showed an increase in arterial stiffness following training. In another study, young women were divided into two groups: a "concentric only" and an “eccentric only” group. Each group performed one phase only (concentric or eccentric) of the biceps curl and only this phase (concentric or eccentric) was performed for the entire eight weeks of training. The researchers in this study found that brachial-ankle PWV increased in the concentric only group but did not increase in the eccentric only group [22]. Studies reporting a decrease [16,20,21] or no change [14,18,19] in arterial stiffness in women following resistance exercise training reported protocols of varying intensities and thus it is unclear how intensity, or any training variable for that matter, affects women’s arterial stiffness responses to resistance exercise training. In men, arterial stiffness following resistance training has been found to increase [17,24,25] or show no change [26,27]. The reasons for these differences in arterial stiffness response to resistance training are not known in men either.

Blood flow responses to resistance exercise training are also variable. Very little work has examined limb microvascular blood flow responses to resistance exercise in women only and both of these studies have shown an improvement in limb microvascular blood flow following training [28,29]. Another study comparing men’s and women’s microvascular limb blood flow responses to resistance exercise also showed an improvement in women’s microvascular limb (forearm) blood flow [19] with training. In men, limb microvascular blood flow has generally been found to improve [27,30] although it has also been shown to decrease [31]. In a study in which sex was not specified, no change in forearm microvascular function was found [32] following resistance exercise training. Femoral artery blood flow has been shown to decrease with age in both men and women [33-35], however, this reduction has been found to be absent in men who are resistance trained [36]. Age-related differences in women's blood flow responses to resistance training remain to be elucidated.

**Study Purpose**

The purposes of this study were two-fold: 1) to measure the time-course of muscle hypertrophy following high-intensity whole-body resistance exercise training in young and older women and 2) to examine arterial stiffness and blood flow responses to this type of training in young and older women.

**Research Questions**

1. During eight weeks of high-intensity resistance training, when would hypertrophy be evident, and at what sites (50% quadriceps and hamstrings, 70% quadriceps and hamstrings, deltoid, chest, and/or subscapular) would it first be evident, in young and older women?
2. Following eight weeks of high-intensity resistance training, would arterial stiffness and blood flow changes occur and would these changes differ between young and older women?

**Hypotheses**

1. I hypothesized that hypertrophy would be detected three to four weeks into high-intensity resistance training in both young and older women and that this hypertrophy would first be detected in the upper body and hamstrings.
2. I hypothesized that high-intensity resistance training would not increase arterial stiffness and that high-intensity resistance training might have improved blood flow.

**Significance of the Study**

Resistance training is recommended for both men and women, young and old as a method of increasing strength, improving risk factors for both cardiovascular and metabolic diseases, and improving quality of life both psychologically and physiologically [1]. Although recommended for a wide range of people, the majority of research on resistance exercise has been performed on young men. This study provides useful information on the time-course of muscle hypertrophy in young and older women. It is of interest to know if one group gained muscle more quickly or slowly than the other group. This type of knowledge has the practical application of allowing those individuals performing resistance exercise to know when they may expect to see a change in muscle size. This knowledge may keep women motivated to continue on an exercise program if they were to know that muscle size gains are occurring despite the possibility that the gains may not be visible to them with the naked eye.

Also, no study had previously directly compared young and older women's arterial stiffness and blood flow responses following resistance exercise training. As resistance exercise is recommended for both young and older women, as previously stated, it is important to know how this method of exercise affects the vasculature. Women of all ages are recommended to resistance train in order to improve strength, among other benefits [1]. Thus, if this type of exercise were to negatively affect the vasculature, it would be important to know. Previous work has suggested that high-intensity resistance exercise may be detrimental to the vasculature [13] although, as previously described, this study was flawed. As women may desire to perform high-intensity resistance exercise, it is important to determine how this type of exercise training affects their large arteries and microvasculature.

**Assumptions**

1. All subjects would answer all questionnaires truthfully.
2. All subjects would follow guidelines for behavior prior to any testing.
3. Subjects would not embark on extra exercise programs or make large dietary changes during the course of the study.
4. Subjects would adequately nourish themselves during the course of the study.
5. Some subjects would utilize hormonal contraceptives.
6. Older subjects would be post-menopausal and accurately report their lack of hormone replacement therapy use.

**Delimitations**

1. The results of this study would only be applicable to women 18-25 and 50-64 years of age.
2. Subjects were not resistance trained (defined as >6 months without performing regular resistance exercise).
3. Subjects were not highly endurance trained but may have performed regular low or moderate-intensity endurance exercise (<5 hours per week) which was allowed to be continued during the study.
4. Subjects with known orthopedic or metabolic disorders which would prevent her from participation in the exercise program were not included.
5. Subjects unable to commit to the full time-frame of the study were not included.

6. Only older subjects who were postmenopausal and not on any kind of hormone replacement therapy were included.
7. Only subjects who were not hypertensive (this was allowed to be either naturally or under control with medication) were included.
8. Pregnant women or women who were planning to become pregnant were excluded from the study.

**Limitations**

1. Diet was not controlled.
2. Women may have attempted to lose weight due to excitement with embarkation on a new exercise program.
3. Women varied in initial cardiovascular and strength profiles.
4. Although they were advised not to do so, women may have changed aerobic exercise quantity/intensity during the study.
5. Medical information and health history were obtained through self-report.

**Operational Definitions**

Muscle thickness – The thickness of the muscle as assessed by ultrasound imaging and measuring the distance from the bone-muscle interface to the muscle-fat interface.

Fat thickness – The thickness of the fat as assessed by ultrasound imaging and measuring the distance from the muscle-fat interface to the fat-skin interface.

Skinfolds – A bi-layer of skin as measured using standard body composition assessment calipers.

Pulse wave velocity – The gold standard assessment of arterial stiffness; this measures the speed with which the pulse wave travels through the large arteries.

Applanation tonometry – The flattening of the artery in order to obtain a pressure wave; the technique is used to assess pulse wave velocity.

Resting forearm blood flow – The forearm microvascular response at rest to minimal (50 mmHg) intermittent venous occlusion.

Forearm total hyperemia – The total (area under the curve) increase in blood flow seen following deflation of a blood pressure cuff worn on the upper arm and inflated for five minutes.

Forearm peak hyperemia – The peak blood flow value seen following deflation of a blood pressure cuff worn on the upper arm and inflated for five minutes.

Strain-gauge plethysmography – The utilization of a mercury-filled strain-gauge and blood pressure cuffs in order to obtain the measurements of resting blood flow, total hyperemia, and peak hyperemia.

One-repetition maximum – The exercise-specific greatest amount of weight that can be lifted through a full range of motion with proper form.

Dual-energy x-ray absorptiometry – A low energy x-ray device used to quantify fat, bone-free lean body mass, and bone mineral content.

Bone-free lean body mass – Total body mass minus bone mineral content.

# CHAPTER II: LITERATURE REVIEW

## Introduction

Resistance training is recommended for both men and women, young and old as a method of increasing strength, improving risk factors for both cardiovascular and metabolic diseases, and improving quality of life both psychologically and physiologically [1]. In the following review, the importance of resistance training will first be discussed. The loss of muscle mass with age, known as sarcopenia, makes resistance training extremely important for this population [37,38]. Thus, this condition and resistance training's ability to improve this condition will be the focus of this section (although the benefits of resistance training for young adults will be discussed as well). Next, a review of the relative contributions of neural versus hypertrophic factors to strength gains will be examined. The influence of age and gender on these factors will then be discussed.

The review will then shift from muscular literature to focus on the relevant literature behind the cardiovascular questions of the present study. A brief review of the prevalence of cardiovascular disease and the importance of combating this disease will be presented. Next, the importance of arterial stiffness measurements as they relate to cardiovascular disease will be discussed. Following this, the importance of peripheral blood flow measurements as they also relate to cardiovascular disease will be discussed. Finally, the literature relating to arterial stiffness responses to resistance exercise and peripheral blood flow responses to resistance exercise will be examined.

## Importance of Resistance Exercise Training

With age, older adults lose muscle size and strength. It has been estimated that between the second and eighth decade of life, total lean body mass decreases by approximately 18% in men and 27% in women [39]. Others have suggested that muscle mass declines by around 6% per decade after mid-life [40]. Still others report the rate of muscle mass loss as an annual loss of 1-2% starting after age 50 [41]. This loss of lean body mass would clearly impair daily activities of older adults and contributes to a low functional capacity and possibly to recurrent falls [42]. These functional declines are due to loss of muscle mass itself as well as due to neural impairments that occur with aging [43,44]. The term for the loss in muscle mass with age is "sarcopenia" and this condition is generally diagnosed by assessing appendicular skeletal muscle mass (by dual energy x-ray absoptiometry) and dividing the total of this appendicular skeletal muscle mass by height squared [45]. Once this ratio has been determined, various cut-off points, that differ by sex, have been proposed for determining the official diagnosis of sarcopenic [45]. Some have suggested that only the loss of muscle mass be called "sarcopenia" while the loss of muscle strength should be termed "dynapenia;" the reason given for using a separate term for the loss of strength is that the loss of muscle mass and strength with age may follow separate progressions and thus should not be defined as the same condition [46]. As the term "dynapenia" is still not in as common usage as the term "sarcopenia," through the rest of this review, the term "sarcopenia" will be used to mean both the loss of muscle mass and strength. Whatever the term/s given to the loss of muscle mass and strength with aging, it is clear that these are conditions significantly impacting the well-being of older adults and interventions that could combat these conditions must be tested and implemented if found effective.

Fortunately, effective interventions do exist to assist with delaying the progression of sarcopenia. Exercise has been found to be very beneficial for older adults to perform [1]. It has been suggested that resistance exercise particularly may be most important for delaying the decrements in muscle mass and function seen with age [37,38,47]. One review of sixty-two trials of progressive resistance exercise studies performed in older adults found that in most of the studies examined, progressive resistance exercise improved strength and modestly improved functional abilities (as assessed by measures such as gait speed). This review also noted that, across these sixty-two trials, adverse events were poorly reported; although this may mean that few adverse events occurred, it also leaves those interpreting the results without a clear idea as to the relative safety of these activities for older adults [48]. A Cochrane Database review reported similar findings. This review examined the effects of progressive resistance training on one-hundred and twenty-one studies and found a large, positive effect of this type of training on muscle strength, a modest improvement in gait speed, a moderate to large effect for improvements getting out of a chair, and also reported that adverse events were not well reported in these studies. This review did mention that adverse events that were reported tended to be minor and included generally minor complains such as muscle soreness and joint pain [49]. Thus, it appears that resistance exercise is an effective, and, based on current evidence, generally safe method by which sarcopenia can be positively influenced.

However, it has been suggested that, to most effectively combat sarcopenia, nutritional interventions should be combined with progressive resistance exercise [38,50]. The reason for this suggestion is that older adults may have impaired regulation of appetite [51], the muscles of older adults may be less able to effectively utilize dietary protein, and also older adults may not be able to respond as effectively to resistance exercise as compared to younger adults; thus, it may be beneficial for older adults to consume an elevated amount of dietary protein and/or calories. This resistance to resistance exercise and/or dietary protein induced muscle protein synthesis in older adult has been termed the "anabolic resistance of aging" [50]. To counteract this anabolic resistance of aging, it is recommended that older adults consume approximately 20 g of protein with each of at least three meals throughout the day [52]. It is further recommended that this protein be leucine-rich as this amino acid appears central to the muscle protein synthetic response [50].

Another dietary strategy that may help counteract the anabolic resistance of aging is the increased ingestion of omega-3 fatty acids. Although this is a less well-studied nutritional intervention than increased protein ingestion, it has been shown that increased ingestion of omega-3 fatty acids in the elderly may increase muscle protein synthesis [53]. Supplements added to the diet have also been suggested to delay the progression of sarcopenia; particularly, creatine, in combination with resistance training, has been suggested to improve muscle strength in older adults [54]. Antioxidant supplementation, hormone therapies [38] and/or non-steroidal anti-inflammatory drugs [50] may also prove promising as therapeutic modalities to counteract sarcopenia.

Although by definition, younger adults cannot have sarcopenia, resistance exercise training is also very important for the muscular health of younger adults and can improve muscle size and strength [55]. As, clearly, younger adults will eventually become older adults, it is beneficial for them to develop and maintain muscle mass and strength so as to offset the eventual decline in muscle mass and strength that will occur with old age [56]. Further, increased muscle mass has been proposed to improve immune function, improve glucose uptake, and improve bone development [56].

Similarly to older adults, younger adults can employ certain dietary strategies to enhance their benefits from resistance exercise. Consumption of a high-quality protein source helps with muscle anabolism in younger adults as well as older adults. For example, milk protein has been shown to be superior to soy protein for muscle protein synthesis when consumed in young adults [57]. Also, similarly to older adults, supplemental strategies can help increase muscle mass and function in younger adults. Creatine supplementation has been regularly shown to improve muscle mass and strength [58]. Many other supplements such as beta-hydroxy beta-methyl butyrate, chromium, vanadyl sulfate, boron, dehyoepiandrosterone, and others have been purported to enhance muscle growth with exercise, although findings of the benefits of these supplements are very inconsistent [59].

**The Contributions of Neural Factors and Hypertrophy to Strength Gains**

Initial strength increases with resistance training are typically attributed to neural gains as hypertrophy is commonly thought not to occur until six to seven weeks of training [4]. These neural gains include adaptations throughout the entire nervous system such as improved synchronicity in motor unit firing, reduced bilateral deficit, reduced antagonist muscle activity [4,60] and increased activation in supraspinal centers [61]. One study had young men perform isokinetic resistance training nine times over thirteen days by doing ten sets of five maximal isokinetic knee extensions with the right leg only at each training session. Thigh muscle cross-sectional area was assessed by magnetic resonance imaging and quadriceps femoris strength was assessed both isometrically and isokinetically at 60-240 degrees per second on the same dynamometer on which the subjects trained. The authors found significant increases in both isometric and isokinetic strength following training, but found no increases in muscle hypertrophy [62]. Thus, this study suggests that during these thirteen days over which resistance exercise training occurred, the measured increase in strength occurred due to neural factors alone. Another study had young women resistance train for ten weeks performing unilateral concentric only or eccentric only knee extension training. Training was performed for three days each week and consisted of three sets of ten repetitions. Strength was assessed on a dynamometer and thigh muscle cross-sectional area was assessed using magnetic resonance imaging. Electromyography was used to assess neural activation. The study found that increases in muscle hypertrophy were slightly greater following eccentric only compared to concentric only training and that hypertrophy increases are very specific to the type of training performed. This study also found that electromyography activity increased, in the muscle group trained, following training [63]. Thus, from this study it can be concluded that both neural adaptations and hypertrophy contributed to the strength increases seen with training. A further study looking at the relationship between neural and hypertrophic contributions to strength gains with resistance training examined the idea that endurance training may interfere with gains induced from resistance training [64]. This study used two groups: one group that performed resistance exercise only and one group that performed both resistance and endurance exercise. Both of the resistance exercise groups performed strength/power resistance exercise for two days per week for twenty-one weeks and the resistance exercise consisted of two exercises for the leg extensors and four to five exercises for the other main muscle groups; subjects performed ten to fifteen repetitions per set and performed three to four sets of each exercise. Strength was assessed using one-repetition maximums and isometric assessments; neural activity was assessed with electromyography, and muscle cross-sectional area was assessed using magnetic resonance imaging and muscle fiber size was assessed using muscle biopsies. Assessments were performed every seven weeks. The authors reported large increases in electromyographical activity of the leg extensors (in both groups) as well as increases in strength, muscle cross-sectional area, and muscle fiber areas [64]. The earliest measurements made in this study, after baseline measurements, were at seven weeks of training; thus, it can be concluded that at this stage of training, both neural and hypertrophic adaptations contributed to the increases in strength seen with training. Interestingly, the addition of aerobic training to this resistance training did not appear to greatly influence the results.

Recent work has suggested that muscle hypertrophy may occur earlier than previous thought. Seyennes et al. [5] performed a study to examine the time-course of early muscular adaptations to high-intensity resistance exercise in young men and women. These subjects performed bilateral leg extension three times per week on a flywheel ergometer. Exercise consisted of three sets of seven submaximal warm-up leg extensions followed by four sets of seven maximal concentric and eccentric contractions. Subjects were measured at baseline, following ten days of training, following twenty days of training, and following the entire thirty-five days of training. Knee extension maximum voluntary contraction, electromyography activity of the vastus lateralis and quadriceps femoris, and whole thigh muscle and individual muscle cross-sectional area as assessed by magnetic resonance imaging were assessed. A significant increase in knee extension maximum voluntary contraction was found after only ten days of training. Electromyographic activity increased progressively throughout the training. Whole thigh muscle, vastus lateralis, vastus medialis, and rectus femoris cross-sectional area increased after twenty days of training while vastus intermedius cross-sectional area increased only after the full thirty-five days of training [5]. This study showed that increases in muscle strength occurred relatively early on in the training program and that both hypertrophy and neural factors contributed to this increase in muscle strength [5].

Another study that examined the time-course over which hypertrophic contributions to strength gains occurred was performed by DeFreitas et al. [6]. In this study, young men performed high-intensity strength training for eight weeks. The strength training consisted of three exercises: incline leg press, leg extension, and bench press. For each of these exercises, three sets to failure were performed with the load set so that subjects would likely reach failure within eight to twelve repetitions. The assessments in this study included peripheral computed tomography scanning of the thigh for assessment of muscle cross-sectional area and isometric strength assessments of the dominant leg’s leg extensors performed on a dynamometer. This study found significant increases in thigh muscle cross-sectional area after just two training sessions although, interestingly, it was not until week four that significant increases above baseline in muscle strength were seen [6]. Increases in muscle cross-sectional area were seen throughout the entire training period. In this study, the authors speculated that muscle swelling may have led to erroneous early detection of hypertrophy, and thus, they concluded that true hypertrophy probably did not occur until three to four weeks of training as that was when the strength increase was seen [6]. From this study, it can be concluded that increases in muscle size are detectable early in a training program although caution must be exercised when determining the true cause of the increase in muscle fiber size.

A recent work supports the idea that the findings of Defreitas et al. [6] may reflect true hypertrophy rather than merely muscle swelling. Poole [7] had young men perform single bouts of intense resistance exercise and then measured, via ultrasound and peripheral quantitative computed tomography, changes in muscle size. In this study, subjects completed three sets of eight to ten repetitions on the leg press, leg extension, and leg curl machines. His findings showed that thigh muscle size in young men returned to baseline levels within twenty-four hours following this intense lower-body resistance training session [7].

The time-course of muscle thickness changes in a group of women was examined by Abe et al. [8]. In this study, both men and women aged 25-50 years were examined as they performed high-intensity strength training three days per week for twelve weeks using either one set or three sets of resistance exercise "until they became fatigued" which it appears was meant to occur between eight and twelve repetitions.

The exercises performed were the knee extension, knee flexion, chest press, seated row, elbow flexion, and elbow extension. One-repetition maximums for the chest press and the knee extension were performed on the exercises on which the subjects trained and muscle thickness was assessed using B-mode ultrasound. In the results, the two groups of men and women (performing one set or performing three sets) are grouped together. Significant increases in chest press strength and knee extension strength were seen in the women following four weeks of training. In the men, a significant increase in chest press strength was seen following six weeks of training and a significant increase in knee extension strength was seen following two weeks of training [8]. Significant increases in muscle thickness for women were as follows: biceps increased at eight weeks, triceps and chest increased at six weeks, 70% hamstrings increased at eight weeks. No other significant muscle thickness increases were seen in women. Significant muscle thickness increases for men were as follows: biceps increased at four weeks, triceps increased at eight weeks, 50% and 70% hamstrings increased at six weeks. No other significant increases in muscle thickness were seen in men [8]. From this study, it can be concluded that significant increases in muscle thickness are detectable early into a training program, even in women, and that these increases in thickness vary importantly by the location of the measurement site.

**Influence of Age and Gender on Resistance-Training-Induced Muscle Hypertrophy**

Cannon [3] showed that young (aged 20-30 years) and older women (64-78 years) are capable of similar hypertrophy and strength gains after resistance training. In this study, subjects performed ten weeks of resistance exercise three times per week using three sets of ten repetitions for leg extension and leg flexion at an intensity between 50% and 75% of one-repetition maximum. Muscle strength was assessed every two weeks using peak isometric torque on a dynamometer. Muscle size was assessed with magnetic resonance imaging before and after training and surface electromyography on the vastus lateralis and vastus medialis of the right thigh was used to assess neural activity and was performed every three weeks. In this study, both young and older women showed significant increases in peak isometric torque, muscle cross-sectional area, and neural activation and these responses did not significantly differ between age groups [3]. From this study it can be concluded that young and older women possessed similar capacities to increase muscle size, neural activation, and strength.

It has also been shown that men and women are capable of hypertrophying to the same relative extent following resistance training [2]. This study examined young men and women and had them resistance train three days per week for sixteen weeks using one to three sets of "a variety of weight training exercises involving flexion and extension of the arms and legs performed with free weights and weight machines" [2]. Subjects exercised at between 70% and 90% of one-repetition maximum and performed as many repetitions as possible for each set. One-repetition maximum tests were performed every two weeks to assess strength. Computed axial tomography of the thigh and arm were used to assess muscle cross-sectional area. This study found that increases in muscle size and strength were larger in men than in women following training, but that women had the same relative capacity to hypertrophy [2].

Studies comparing the responses of young and older men and women to resistance exercise training have found a variety of responses. Ivy et al. [65] examined the muscle quality of young men (20-30 years), young women (20-30 years), older men (65-75 years), and older women (65-75 years) after nine weeks of strength training. Muscle quality was determined as quadriceps one-repetition maximum strength divided by muscle volume as assessed by magnetic resonance imaging. This study found that all groups improved their muscle strength, volume, and quality with training and that muscle quality was most greatly increased in young women compared to the other three groups [65]. Thus, from this study it appears that both age groups and sexes are able to increase muscle quality with resistance exercise training and this improvement may be the greatest in young women as compared to older women, older men, and young men. Another study also examining the question of how young and older men and women increase muscle size in response to strength training was performed by Roth et al. [9]. This study examined young and older men and women of the same ages as in the study by Ivy et al. [65]. These men and women performed a six-month whole body resistance exercise training program where they trained with nine exercises for three days per week. The repetition and set scheme varied through the course of the training program. Thigh and quadriceps muscle volume were assessed using magnetic resonance imaging. All groups increased these measures significantly and no changes were found between groups [9]. This study supports the findings of the study by Ivy et al [65] in showing that all groups were able to hypertrophy in response to resistance exercise training. Another study examining age-related differences in muscular and neural responses to resistance training examined younger men (aged $42 \pm 2$ years), younger women (aged $39 \pm 3$ years), older men (aged $72 \pm 3$ years), and older women (aged $67 \pm 3$ years) [12]. These subjects strength trained for six months in a varied program that combined heavy-resistance and "explosive" strength training.  Muscle cross-sectional area of the quadriceps femoris was assessed using an ultrasound scanner; electromyographic activity of the quadriceps muscles was also assessed; strength was assessed using a dynamometer to determine maximal isometric and dynamic strength of the knee extensors [12].  All groups except the older men showed a significant increase in leg extensors muscle cross-sectional area. Both female groups saw greater relative increases in strength compared to the male groups.  All groups saw increases in neural activation with training [12].  To summarize, this study saw some differences in responses that seemed to be dependent on age and/or gender.  Thus, there is disagreement between studies on how age and gender will affect resistance-training induced muscle hypertrophy.

**Cardiovascular Disease**

Cardiovascular disease is currently the leading causes of death in both men and women in the United States [66,67].  The term "cardiovascular disease" includes coronary artery disease, cerebrovascular disease, peripheral artery disease, rheumatic heart disease, congential heart disease, deep vein thrombosis, and pulmonary embolism [67]. According to combined statistics by the American Heart Association, the Centers for Disease Control and Prevention, and the National Institutes of Health published in 2012 for the year 2008, greater than 1 in 3 adults (or an estimated 82,600,000 people) currently have cardiovascular disease.  These groups also reported that the overall rate of death attributable to cardiovascular disease was 244.8 per 100,000 with rates of 287.2 per 100,000 for white males, 390.4 per 100,000 for black males, 200.5 per 100,000 for white females, and 277.4 per 100,000 for black females [68].  It is estimated that 33.5% of adults (at least 20 years of age) in the United States have hypertension and this prevalence has been found to be equal between men and women [68]. There are many risk factors for cardiovascular disease including family history and genetics, smoking/tobacco use, abnormal blood lipids, physical inactivity, being overweight or obese, and being diagnosed with diabetes mellitus [68].

### Importance of Measuring Arterial Stiffness

Arterial stiffness is known as an independent predictor of cardiovascular disease [69]. It is well-known that increases in resting blood pressure will increase the risk of cardiovascular disease [70,71]. Increased stiffness of the arteries contributes greatly (and may be the greatest contributor) to this increased pressure [23]. As the arteries become detrimentally remodeled and more load is carried by the stiff collagen fibers rather than the more compliant elastin fibers, the stiffness of the arteries increases [72]. With age, both the intima and media layers of the arterial wall change so as to rely more on collagen and less on elastin to bear load and thus these alterations contribute to increases in arterial stiffness seen with age [72]. Also contributing to arterial remodeling, leading to increases in arterial stiffness, are arterial wall calcification and accumulation of advanced glycation end products [73,74]. Arterial stiffness is thus a valuable physiological property to assess.

If arterial stiffness is to be used clinically as a marker of cardiovascular disease, it is important that the measurement of arterial stiffness be performed using a relatively simple (non-invasive) procedure. Many non-invasive methods have been developed and currently exist in order to measure arterial stiffness and, as these methods are not always in agreement with each other [75], a “gold standard” method, known as pulse wave velocity, has been determined [69,76]. Pulse wave velocity is considered the “gold standard" as it is generally accepted as the most simple, reproducible, and non-invasive method of determining arterial stiffness [76].

Measurement of central pulse wave velocity, also known as carotid-femoral pulse wave velocity, is the most clinically relevant pulse wave velocity measurement as the aorta and aortic branches most directly interact with the left ventricle. (Although carotid-femoral pulse wave velocity is obtained from pressure waves obtained at the carotid pulse and the femoral pulse, the over-body distance measurements are performed so as to provide a pulse wave velocity value for the aortic-iliac pathway) [76]. Difficulties in obtaining an accurate measurement of carotid-femoral pulse wave velocity may occur, however, particularly when a subject has a large bust or suffers from obesity; both of these conditions make obtaining accurate over-body distance measurements as well as femoral tonometry readings more difficult to obtain [76].

Although, as previously stated, elevated central arterial stiffness is an independent predictor of cardiovascular disease risk, the physiological importance of peripheral arterial stiffness is still relatively unknown and debated [75,76]. In an analysis of 2,798 subjects, it was found, perhaps counter intuitively, that increased aortic stiffness was a much greater predictor of even peripheral artery disease than were measurements of peripheral arterial stiffness [75]. Another study showed that only elevated aortic stiffness, and not peripheral arterial stiffness, predicted cardiovascular disease deaths in hemodialysis patients [77]. As would be expected by this lack of cardiovascular disease predictive ability by peripheral stiffness measurements, despite established predictive ability of cardiovascular disease by central stiffness measurements, there is heterogeneity of stiffness throughout the arterial tree: the more muscular and less elastic peripheral arteries are generally stiffer than the more elastic central arteries. Laurent et al. [76] stated that normal human pulse wave velocity values may change from 4-5 m/s in the ascending aorta to 5-6 m/s in the abdominal aorta to 8-9 m/s in the iliac and femoral arteries. As the arterial tree branches from the more proximal to the more distal arteries, the stiffness of the vessels increases [76]. Although measurement of peripheral arterial stiffness is arguably much less important than measurement of central arterial stiffness, it is still of interest to examine these changes in response to interventions in an attempt to ascertain any regional (arm or leg) beneficial or detrimental effects.

**Importance of Peripheral Blood Flow Measurements**

Impaired limb blood flow is a contributor to the metabolic syndrome and is implicated in impaired cardiovascular function [78]. Decreased basal limb blood flow has been associated with reduced lipoprotein clearance [78] and appears to contribute to insulin resistance [79]. Depressed ability of the limb microvasculature to vasodilate in response to a stimulus (reactive hyperemia) has also been suggested to be a predictor of cardiovascular disease [80].

The reactive hyperemia response is both dependent on nitric oxide actions on the endothelium and on non-nitric oxide, as yet unknown, factors. It is thought that the late-phase vasodilatory response is nitric oxide dependent while the early response, reflected in the measurement of peak reactive hyperemia, reflects the response due to the as yet unknown mechanisms [81]. Endothelial dysfunction occurs when there is excessive inflammation, abnormal vasomotor function, impaired structural integrity of the endothelium, and impaired nitric oxide synthesis, release, and bioavailablity [82].

Although nitric oxide is the largest contributor to endothelial vasodilation, other factors such as prostacyclin and endothelium-derived hyperpolarizing factor contribute as well [83].

As the cardiovascular system ages, limb blood flow has generally been found to decrease [33] although it appears that resistance exercise training can ameliorate this impaired limb blood flow in older adults [36,84]. These improvements in basal limb blood flow following resistance exercise have been seen even in the absence of increases in limb muscle mass, suggesting that factors other than the need to provide blood flow to a resistance-exercise-induced greater quantity of muscle mass influence the increase in blood flow [85].

Many techniques exist to measure basal limb blood flow and reactivity. The most commonly used technique that is used to assess endothelial function is flow mediated dilation performed with an ultrasound system [83]. Another commonly used technique is strain gauge plethysmography, also known as venous occlusion plethysmography. This is the oldest technique (developed over 100 years ago) used for these purposes [86]. Both vascular ultrasound and strain-gauge plethysmography can also be used to assess basal limb blood flow.

**Resistance Exercise Training and Arterial Stiffness**

The effects of resistance exercise training on the stiffness of the arteries has been shown to vary with some studies showing an increase in stiffness [13,22,25], some studies showing a decrease in stiffness [16,21] and some studies showing no change in stiffness [18,28] following training. These studies have varied in the age studied, the intensity of the training, the duration of the training, and the arterial stiffness measurement used. As the present study examined women only, studies performed on women will be the focus of this section.

Cortez-Cooper et al. [13] found an increase in both carotid-femoral pulse wave velocity and carotid augmentation index following eleven weeks of high-intensity resistance training in women aged 29$\pm$1 years. They also found no change in femoral-tibialis posterior pulse wave velocity following this training. Other studies showing no change in arterial stiffness suggest that the findings of Cortez-Cooper et al. [13] are due to the high-intensity nature of their training program and that thus high-intensity resistance exercise may be detrimental for the arterial health of women. Although this is a possibility, it is very important to acknowledge that Cortez-Cooper [13] also saw a significant increase in carotid-femoral pulse wave velocity in both the resistance training group and the non-exercising control group. The augmentation index did not increase in the control group as it did in the resistance training group, but pulse wave velocity is considered the "gold standard" in arterial stiffness assessment [23]. Thus, it is questionable whether this study truly showed an increase in arterial stiffness following training. Another study showing an increase in arterial stiffness following training assessed brachial-ankle pulse wave velocity in subjects with a mean age of 19 years who trained at a moderate intensity for eight weeks [22]. In this study one group performed only concentric exercise and one group performed only eccentric exercise. The group that performed the concentric exercise only saw an increase in arterial stiffness while the group that performed the eccentric exercise only saw no change in arterial stiffness [22].

Decreases in arterial stiffness following resistance exercise training have also been found. A study of 42-55 year old women who performed low-intensity home-based resistance exercise training for ten weeks found that brachial-ankle pulse wave velocity decreased [16]. Another study of 60-75 year old women who performed moderate intensity resistance exercise for sixteen weeks showed a decrease in augmentation index [21]. Ho et al. [20] found that, when they examined mean values, augmentation index did not change in overweight and obese women aged 43-59 years who resistance trained at a high intensity for twelve weeks. Interestingly, in this study, the researchers then divided the subjects into “responders” and “non-responders”. Eleven out of the sixteen women in the study were “responders” meaning they showed a decreased augmentation index following training. The reasons for the differences between the responders and non-responders was unclear [20].

Finally, several studies have shown no change in arterial stiffness following training. The aforementioned study by Ho et al. [20] found no change in arterial stiffness when mean values were examined. Another study resistance trained women aged 32-59 years at a moderate intensity for twelve weeks and found no change in either carotid-femoral pulse wave velocity or femoral-tibialis posterior pulse wave velocity [18]. Collier et al. [19] had similar findings after resistance training pre-hypertensive and hypertensive women aged 40-60 years at a moderate intensity for four weeks. They found no change in carotid-femoral pulse wave velocity. Another study strength trained overweight and obese 35-50 year old women at a moderate intensity for twelve weeks and found no change in augmentation index following training [28].

The underlying reasons behind the discrepancies in findings related to women's arterial stiffness responses to resistance training are unclear. Men's arterial stiffness responses to resistance training are likewise varied with some studies showing an increase in stiffness [17,24,25] and some showing no change in stiffness [26,27]. Hopefully future research will be able to identify any possible training-related or subject characteristic-related factors contributing to these discrepancies in findings.

**Resistance Exercise Training and Peripheral Blood Flow**

Blood flow responses to resistance exercise training are also variable. Very little work has examined limb microvascular blood flow responses to resistance exercise in women only and these studies have shown an improvement in limb microvascular blood flow (assessed with strain-gauge plethysmography) following training [28,29]. Egana et al [29] strength trained women aged 59-79 at a moderate intensity for twelve weeks using elastic-band based training. They assessed resting calf blood flow using strain-gauge plethysmography and found an increase in blood flow [29]. Another study strength trained women aged 35-50 for twelve weeks at a moderate intensity and, using strain-gauge plethysmography, found an increase in resting forearm blood flow and peak forearm reactive hyperemia [28].

Another study comparing men's and women's microvascular limb blood flow responses to resistance exercise also showed an improvement in women's microvascular limb (forearm) blood flow [19] with training. This study resistance trained pre-hypertensive and hypertensive women aged 40-60 at a moderate intensity for four weeks and found, using strain-gauge plethysmography, that both resting forearm blood flow, peak forearm blood flow in response to reactive hyperemia, and total blood flow in response to reactive hyperemia increased following training [19]. In men, limb microvascular blood flow has generally been found to improve [27,30] although it has also been shown to decrease [31]. In a study in which sex was not specified, no change in forearm microvascular function was found [32] following resistance exercise training. Femoral artery blood flow has been shown to decrease with age in both men and women [33-35], however, this reduction has been found to be absent in men who are resistance trained [36]. Age-related differences in women's blood flow responses to resistance training remain to be elucidated

**Summary**

Research has shown that both young and older individuals are able to respond positively to resistance exercise training. Also, it is possible that hypertrophy induced by resistance exercise training may occur earlier than previous thought. However, studies are inconsistent in their findings of age and gender differences in this hypertrophy in response to resistance exercise training.

Research also shows that central arterial stiffness and peripheral microvascular measurements are reliable indicators of cardiovascular disease risk. In response to resistance exercise training, central arterial stiffness may increase, decrease, or show no change while peripheral microvascular function has generally been shown to improve.

# CHAPTER III: METHODOLOGY

The main purpose of this study was 1) to measure the time-course of muscle hypertrophy following whole-body resistance exercise training in young and older women and 2) to examine arterial stiffness and microvascular responses to this type of training in young and older women.

**Subjects**

Forty-four subjects consented to participate. Six subjects decided to not participate prior to any testing or training. Nine subjects decided not to participate following pre-testing or following some exercise training. The major reason for choosing not to participate following consent and/or testing and training was the time commitment. Twenty-nine subjects (young = 16; older = 13) completed both testing and training. Young subjects were aged 19-25 (mean = 22 years). Older subjects were aged 51-62 (mean = 57 years). Subjects were recruited by fliers, visiting classrooms, and word of mouth. All subjects were screened for inclusion and exclusion criteria and then had a resting blood pressure taken by the investigator to assure their non-hypertensive status. Subjects were thoroughly informed of the details of the study prior to signing an Institutional Review Board approved "Informed Consent" document. Older subjects were required to obtain medical clearance from their physicians prior to signing an "Informed Consent" document. (Young subjects were not required to obtain this clearance). Following consent, subjects participated in a "familiarization." During this visit, subjects were familiarized with the exercise machines on which they would be training, were informed of the 1-RM protocol and were shown the various rooms and machines in which testing would take place; subjects were also encouraged to ask questions during this visit. This study was approved by the University of Oklahoma Health Sciences Center Institutional Review Board for Human Subjects.

*Inclusion Criteria*

1. Subjects were women aged 18-25 and 50-64 years.
2. Subjects were not resistance trained (defined as >6 months without performing regular resistance exercise) and were not highly endurance trained but may have performed regular low or moderate-intensity endurance exercise (<5 hours per week) which was allowed to be continued during the study.
3. Subjects had no known orthopedic or metabolic disorders which could have prevented them from participation in the exercise program.
4. As previously stated, women aged 50-64 had to obtain medical clearance from their physician.
5. Older subjects had to be postmenopausal and not on any kind of hormone replacement therapy.
6. Subjects had to be not hypertensive (BP>140/90) either naturally or controlled with medication.
7. Women had to not be pregnant or planning to become pregnant.

*Exclusion Criteria*

1) Subjects who were outside the age range.
2) Subjects who were regularly engaging in resistance training (>6 months of performing regular resistance exercise) or were endurance-trained (>5 hours per week of moderate or heavy endurance exercise).

3) Subjects with known orthopedic or metabolic disorders which would have prevent them from participation in the exercise program.
4) Subjects with physicians who refused to provide medical clearance.
5) Older subjects who were not postmenopausal.
6) Older subjects who were on any kind of hormone replacement therapy.
7) Subjects who were hypertensive (Blood Pressure >140/90).
8) Subjects who were pregnant or planning to become pregnant.

**Experimental Design**

Participants first visited the laboratory for a screening and consent visit. Following these visits, subjects came to the laboratory for their first baseline assessment. Approximately three weeks during which no exercise was performed was allowed as a time control to quantify the stability of the measurements. Following the three weeks, a second baseline measurement was performed. The week following the performance of the second baseline measurements, the subjects started the resistance training. Resistance training involved eight weeks of three weekly visits to the laboratory. On the first visit of each week, several body composition measurements were performed. Every other week, strength assessments were performed.

**Screening Visit**

During the screening visit, subjects were screened for inclusion/exclusion criteria. This was done verbally and by completion of a health status questionnaire and a menstrual history questionnaire. Separate menstrual history questionnaires were given to premenopausal and postmenopausal women. Subjects also had the study explained to them and completed an informed consent and HIPPA form at this time.

Following approximately thirty-five minutes of seated rest during which the medical history was obtained and the study was explained, subjects then had their brachial blood pressure taken using an automatic blood pressure cuff (Omron Healthcare Inc., Vernon Hills, IL). If either systolic or diastolic blood pressure was too high (>140/90), subjects were instructed to relax and, following several minutes, the blood pressure measurement was repeated. If blood pressure remained too high, subjects were excluded from the study. If blood pressure was appropriate for inclusion, subjects were asked to sign the informed consent and HIPPA forms.

**Familiarization Visit**

During this visit, subjects were familiarized with all six exercise machines on which they would be training (leg press, leg extension, leg curl, chest press, shoulder press, and lat pull-down), and were informed of the 1-RM protocol. Subjects were also shown the various rooms and machines in which testing would take place; subjects were encouraged to ask questions during this visit.

**Pre1/Pre2/Post Visits**

During these visits, subjects had a variety of measurements performed on them: a full body Dual energy X-ray Absorptiometry scan, 1-RM assessments on all machines, brachial blood pressure, carotid-femoral and femoral-tibialis posterior pulse wave velocity, resting forearm blood flow, forearm reactive hyperemia, an upper body functional scale questionnaire, a lower body functional scale questionnaire, ultrasound assessment of muscle thickness (at seven sites) and fat thickness (at eight sites), thigh circumference, thigh skinfolds (4 sites), and weight. Height was also assessed on the first visit only. The order in which measurements were performed varied, although 1-

RM testing was always performed last as this would affect all other physiological measurements if performed prior to them.

*Dual Energy X-ray Absorptiometry (DXA)*

Whole body DXA scans were used to determine changes over time in total body and regional lean and fat mass. The scan was analyzed as a whole and by compartment. Prior to each scan, the weight of each subject was recorded. Prior to the first scan only, the height of each subject was also recorded. Young subjects were asked to provide a urine sample for determination of pregnancy status. (No subjects were found to be pregnant). Following this, the subject was then instructed to remove all metal and plastic (if any had been worn to this visit) and to take off her shoes. The subject then lay still on the DXA machine (GE Medical Systems, Lunar Prodigy encore software version 10.50.086, Madison, WI) while the scan was performed. The scanning arm of the DXA machine moved slowly above the subject, systematically scanning her from head to foot. The DXA emits low dose radiation x-rays; the difference in attenuation of these x-rays as they pass through body tissue is used by the DXA to differentiate between bone, fat, and non-bone lean tissue.

*One-Repetition Maximum (1RM)*

The maximum amount of weight that could be lifted once was assessed on each machine (leg press, leg extension, leg curl, chest press, shoulder press, and lat pull-down) using standard ACSM protocol [87]. This protocol was as follows:

Step 1) The subject performed a light warm-up of five to ten repetitions at an estimated 40-60% of perceived maximum.

Step 2) Following a 1-minute rest with light stretching, the subject did three to five repetitions at 60-80% of perceived maximum.

Step 3) The subject should have been close to perceived 1-RM in Step 2. A small amount of weight was added, and a 1-RM lift was attempted. If the lift was successful, a rest period of three to five minutes was provided. The goal was to find the 1-RM within three to five maximal efforts. Clear communication regarding the difficulty or ease of each attempt was performed in order to determine the appropriate weight with which to load the machine for the next attempt.

Step 4) The 1-RM for each exercise was recorded as the heaviest weight that could be lifted using a full range of motion and proper form.

The 1-RMs were assessed in the following order: leg press, chest press, leg curl, shoulder press, leg extension, lat pull-down.

*Blood Pressure (BP)*

Blood pressure was always the first cardiovascular assessment performed. The subject was asked to lie supine and to not move or talk much. (Subjects were always encouraged to ask questions if unsure of what was being performed but they were asked to not attempt to carry on a lively conversation as this would affect cardiovascular measurements). Brachial systolic (SBP) and diastolic (DBP) blood pressures were measured on the right arm, following approximately ten minutes of supine quiet rest, using an automatic BP measuring device (Omron Healthcare Inc., Vernon Hills, IL) while the subject was still supine. Two BP measurements were taken and approximately one minute was allowed between measurements. If SPB measurements were within 5 mmHg of each other, the average of the measurements was used for analysis. If the first two SBP measurements were not within 5 mmHg, further rest was allowed and, following several minutes, the BP measurement was repeated.

### *Pulse Wave Velocity (PWV)*

Following blood pressure assessment, pulse wave velocity (PWV), an indicator of arterial stiffness, was assessed using applanation tonometry (SphymoCor, AtCor Medical, Sydney, Australia). Both central (carotid-femoral) and regional (femoral-tibialis posterior) PWV were assessed. A high-fidelity strain-gauge transducer (Miller Instruments, Houston, TX, USA) was placed over the right common carotid and the femoral artery, sequentially, to obtain pulse pressure waveforms. Over-body distances from the right common carotid artery to the suprasternal notch and from the suprasternal notch to the femoral artery were measured using a standard tape measure. The carotid to suprasternal notch distance was then subtracted from the suprasternal notch to femoral distance to give an estimate of aortic to femoral artery distance. The over-body distance from the femoral to the tibialis posterior artery was also measured and pulse waves were obtained at these sites as well. Three lead electrocardiographic monitoring (ECG) was used as a timing marker. Pulse wave velocity is derived from these measured distances and the time delay between the ECG obtained R-waves at the proximal and distal measurement sites (SphymoCor, AtCor Medical).

### *Forearm Blood Flow and Reactive Hyperemia*

Next, forearm blood flow and reactive hyperemia were assessed. Forearm blood flow measurements were measured using strain gauge plethysmography as described previously [88]. A cuff was placed on the upper arm and another cuff was placed on the wrist. The wrist was slightly elevated and the upper arm was supported so that the subject was not using muscular contraction to support her arm. An appropriately sized strain gauge (2 cm less than the circumference of the forearm at its widest point) was placed around the forearm at its widest point. Following this set-up, the wrist cuff was then inflated to a pressure of 200 mmHg for 1 minute. Blood flow was measured using an EC6 strain gauge plethysmograph (DE Hokanson) and analyzed using NIVP3 software. For each measurement, the upper arm cuff was inflated to 50 mmHg for 7 sec followed by an 8 sec deflation (0 mmHg). Six measurements were taken and averaged.

Forearm reactive hyperemia was measured immediately following the blood flow measurements. With the participant in the same position, the cuff on the upper arm was inflated to 220 mmHg for five minutes. Four minutes after upper arm cuff inflation, the wrist cuff was inflated. After the full five minutes were over, the upper arm cuff was rapidly deflated and forearm blood flow measurements were obtained as described above for three minutes following deflation (13 readings). Peak forearm blood flow was recorded as the highest blood flow measured after deflation of the cuff. Area under the curve (AUC) for all 13 measurements was also calculated and represents total forearm reactive hyperemia.

*Functional Questionnaires*

Subjects completed two functional questionnaires: the “Modified American Shoulder & Elbow Surgeons Rating Scale” and the “Lower Extremity Functional Scale” (reprinted from Brinkley, J.Stafford, P., Lott, S., Ridle, D., & The North American Orthopedic Rehabilitation Research Network, The Lower Extremity Functional Scale: Scale development, measurement properties, and clinical application, Physical Therapy, 1999, 79, 4371-383, with permission of the American Physical Therapy Association).

Both of these questionnaires presented subjects with a list of daily activities (i.e. open a jar of food, getting into or out of bath, rolling over in bed) which they rated on a likert scale. Subjects read each activity and rated, by assigning a number, how difficult it was for them to perform that activity. Subjects were instructed to do their best to rate each activity honestly and to the best of their ability even if they were not used to performing that activity often (i.e. making sharp turns while running). Each individual activity's rating score was then added together to form a total. This total was then divided by the total number of activity assessments in that questionnaire. This value then became their average functional rating for that scale.

*Ultrasound Muscle and Fat Thickness*

Muscle and fat thickness were measured using B-mode ultrasound (Fukuda Denshi UF-750XT (Tokyo, Japan). Subjects were brought into a private room where they were first measured with a tape measure in order to determine the location at which the ultrasound measurements were to be performed. All measurements were performed on the right side of the body while the subject stood with her body weight evenly distributed on each leg. First the investigator palpated for the greater trochanter. This was done by asking the subject to hold onto the wall and to repeatedly abduct her leg while the investigator palpated in the general area. Once this site was determined, the investigator placed the start of the tape measure on this location and brought the other end of the tape measure towards the knee in order to locate the lateral epicondyle. Once this site was located, the investigator recorded the distance measured. 50% of this distance was then marked with a permanent marker on both the front and the backside of the thigh. 70% of this distance (meaning 70% of the distance upward from the lateral epicondyle) was also marked both in both the front and the back of the thigh. These locations were the sites of the 50% quadriceps, 50% hamstrings, 70% quadriceps, and 70% hamstrings ultrasound muscle and fat thickness measurements.

The upper body was also measured with a tape measure first in order to determine appropriate ultrasound measuring sites. The subject was asked to abduct her right arm and the distance between the inner fold of the elbow and the acromion process was measured. Two-thirds of this distance, measured upwards from the elbow, was marked. The chest site was measured at two “finger-widths” above the collar bone and the subscapular measurement was measured at two “finger-widths” below the point of the scapula. Subjects were instructed to manipulate their right arm behind their back so as to cause the distal point of the scapula to become apparent and this site was noted. Upper body muscle and fat thickness measurements were performed at the chest, subscapular, and deltoid sites. A visceral fat measurement was also obtained. This measurement was performed at two-thirds of the distance (upward) from the naval to the manubrium. Subjects were encouraged to maintain the ultrasound location marks on their own although they could clearly not be forced to do this. Approximately 60% of the subjects regularly re-marked the sites. For those subjects who did not remark the sites, sites were re-measured at each ultrasound assessment visit.

Once all sites were measured, subjects were instructed to stand relaxed, with their weight balanced, as a probe with a small amount of gel was placed over the various sites. All sites were measured with the probe held horizontally. The investigator was careful to hold the probe lightly and to not depress the tissue as this would have distorted the image. Two images were taken at each site. Images were stored for later analysis. Muscle thickness was determined as the distance from the bone to the fat layer. Fat thickness was determined as the distance from the muscle to the skin. Measurements were taken once on each image (two images per site) and the two measurements at each site were then averaged.

*Skinfolds and Circumference*

Four 50% thigh skinfolds (anterior, posterior, lateral, medial) were taken in duplicate using a Lange caliper. A 50% thigh circumference was also measured in duplicate with a standard measuring tape. The 50% location was performed at the same site as the 50% ultrasound measurements and was determined as described in that section (above). Muscle cross-sectional area (CSA) was calculated using two methods: Moritani and deVries:

$$\mathrm{CSA} = \pi \left[ \frac{\mathrm{Circumference}}{2\pi} - \frac{\sum_{i=1}^{4} \mathrm{skf}_i}{4} \right]^2 ,$$

where “Circumference” is 50% thigh circumference and “skf” refers to the thigh skinfold thicknesses at all four sites, and Housh multiple regression:

$$\mathrm{CSA} = (4.68 \times \mathrm{Circumference}) - (0.64 \times \mathrm{skf_A}) - 22.69,$$

where “Circumference” is 50% thigh circumference and “$\mathrm{skf_A}$” was the anterior thigh skinfold [89].

**Bi-weekly Measurements**

*One-Repetition Maximum*

Strength was assessed every other week using the same 1-RM procedures as described previously in the “Pre1/Pre2/Post Measurements” section. Upper body strength was assessed on the second training session of weeks two, four, six, and eight. The strength was assessed on the chest press, shoulder press, and lat-pull down in that order. In between these exercises, on this training day, subjects performed their standard lower body exercises (leg press, leg curl, leg extension) using the repetitions and sets for a normal day of exercise training. Lower body strength was assessed on the third training session of weeks two, four, six, and eight. The strength was assessed on the leg press, leg curl, and leg extension in that order. In between these exercises, on this training day, subjects performed their standard upper body exercises (chest press, shoulder press, lat pull-down) using the repetitions and sets for a normal day of exercise training. Prior to any 1-RM assessment, investigators were careful not to look at any previous 1-RMs for that subject so as not to bias the results. It could not be helped if subjects happened to remember their previous performance, however. Following 1-RM assessment, subjects were told how they had performed. Following all training and testing, subjects were given a copy of their strength progression throughout the course of the study.

**Weekly Measurements**

Prior to any exercise training, on the first visit of each week, a measurement session was performed. All ultrasound muscle and fat thickness assessments, four thigh skinfolds, and a thigh circumference were performed. The details of these measurements are described above in the Pre1/Pre2/Post Measurements section.

**Exercise Training Visits**

Eight weeks of progressive resistance exercise were performed. Subjects trained three times per week using six exercise machines: leg extension, leg curl, leg press, lat pull-down, shoulder press, and chest press. Exercises were not performed in the same order for each session although during each session lower body and upper body exercises were always alternated. Subjects often performed exercises in the same order in which 1-RMs were assessed (leg press, chest press, leg curl, shoulder press, leg extension, lat pull-down), however, due to the need to train multiple subjects during many of the training sessions, this order was not always performed. All exercise sessions were supervised by one or several of the investigators. Sometimes several subjects were trained at once and sometimes a subject was trained alone. All training sessions (repetitions, sets, and any special notes) were recorded by an investigator during the training session.

Each exercise was performed for three total sets with approximately 60 s of rest between sets and between exercises. Subjects were encouraged to push themselves. On the first lower body and the first upper body exercise performed, subjects lifted at a light weight for ten repetitions in order to warm-up. Initially, subjects lifted at 80% of 1-RM. If this weight was too heavy for a subject to complete at least eight repetitions, then the weight was adjusted downwards to a weight that the subject could manage. If the subject completed at least eight repetitions, the weight was kept at this level. The goal of the first two sets was to perform ten repetitions. The third set was performed to "failure" with failure designed to occur around ten repetitions. Subjects were strongly encouraged to keep performing repetitions beyond ten if this was possible for them to do, however. Once a subject's repetitions in this set exceeded 10, weight on that exercise was increased. This progression continued throughout the eight weeks of training. The frequency of increases in weight varied widely by individual subject and by exercise machine.  For example, leg press weights increased for many subjects approximately every three training sessions while chest press weights often increased only two or three times throughout the entire eight weeks.  In general, subjects were able to increase weights on the leg exercises more quickly than they were able to increase the weights on the upper body exercises.  As these were free-living human subjects prone to day-to-day variations in strength and motivation, occasionally a subject's weight on an exercise would be increased following one training session and then have to be returned to what was previously being worked at for the next training session if the subject could not perform the required repetitions at the new weight.  Each training session took approximately thirty-five to forty-five minutes.

**Data Analyses**

Repeated measures analysis of variance (ANOVA), 2 groups x 2 time-points was first used to assess stability of the measurements.  For measurements performed at only three time-points (Pre1, Pre2, Post), Pre1 and Pre2 were the time-points compared. For measurements performed weekly, Pre2 and Week1 (prior to first training session) were the time-points compared.  When no significant time effects were found, Pre1 and Pre2 (or Pre2 and Week1) values were averaged.  This average Pre value, was then used for all subsequent analyses and is referred to henceforth as simply "Pre".  If a significant time effect was found between Pre1 and Pre2 values, the time closest to the start of training, Pre2 for Pre1/Pre2/Post measurements or Week 1 for weekly measurements, was used as "Pre".  Reliability calculations were also performed on the cardiovascular assessments, strength assessments, total body DXA assessments, and the functional assessments using standard error of the measurements, Pearson correlations, and Student's t tests.

The effect of the intervention was assessed using repeated measures ANOVA (2 groups x 2 time-points) or, for variables that were measured weekly, repeated measures ANOVA (2 groups x 9 time-points). 1-RM's were analyzed using repeated measures ANOVA (2 groups x 6 time-points). Post-hoc paired sample and independent sample t-tests were performed as necessary to decompose main effects and interactions. For analyses, alpha was also set at 0.05. All data were analyzed using SPSS for Windows (Chicago, Illinois). For both pulse wave velocities, peak and area under the curve reactive hyperemia, and strength changes, individual responses were also examined.

Multiple regression analysis was also performed to examine predictors of changes in strength from pre to post training. For each for the six exercises, the initial strength on that exercise and the changes in muscle thickness that would be relevant to that exercise (for example, quadriceps muscle thickness as a predictor for leg press strength) were examined as predictors.

# CHAPTER IV: RESULTS AND DISCUSSION

**Results**

The purpose of this study was to compare the time-course of muscle hypertrophy and to examine the arterial stiffness and peripheral blood flow responses in young and older women to high-intensity resistance exercise training.

*Subject Characteristics*

Forty-four subjects were consented.  Six subjects decided to not participate prior to any testing or training.  Nine subjects decided not to participate following pre-testing or following some exercise training.  The major reason for choosing not to participate following consent and/or testing and training was the time commitment. Twenty-nine subjects (young = 16; older = 13) completed both testing and training. Young subjects were aged 19-25 (mean = 22 years).  Older subjects were aged 51-62 (mean = 57 years).  All subjects were not resistance trained (defined as >6 months without performing regular resistance exercise) and were not highly endurance trained but may have performed regular low or moderate-intensity endurance exercise (<5 hours per week) which was allowed to be continued during the study.  All subjects had no known orthopedic or metabolic disorders which could have prevented them from participation in the exercise program.  All older subjects had obtained medical clearance from their physicians and all older subjects were postmenopausal and not on any kind of hormone replacement therapy.  The blood pressure of all subjects was below 140/90 on the day of the screening and all women were not pregnant of planning to become pregnant.  Four of the older subjects and none of the younger subjects were on blood pressure medication.  Two of the younger subjects were taking oral contraceptives.

Further characteristics of the subjects prior to any exercise training are shown in Table 1.

**Table 1. Subject Characteristics (Before Exercise Training)**

| | Young (n = 16) | | Older (n = 13) | |
|---|---|---|---|---|
| Age (years) | 22 | 2 | 57* | 3 |
| Height (m) | 167.5 | 5.8 | 164.5 | 4.2 |
| Body Mass (kg) | 66.0 | 11.9 | 82.7* | 17.0 |
| Fat Mass (kg) | 22.4 | 9.0 | 36.7* | 11.5 |
| % Fat | 33.3 | 8.7 | 43.9* | 5.4 |
| Bone-free Lean Mass (kg) | 40.0 | 5.4 | 42.6 | 6.1 |
| BMC (kg) | 2.7 | 0.4 | 2.7 | 0.3 |
| SBP (mmHg) | 108 | 8 | 119* | 13 |
| DBP (mmHg) | 69 | 6 | 76* | 6 |
| Aerobic Activity (hrs/week) | 1.5 | 1.7 | 0.9 | 1.3 |

SBP, systolic blood pressure; DBP, diastolic blood pressure; BMC, bone mineral content; Results are presented as Mean and Standard Deviation; *$p<0.05$ from young

*Pre1 to Pre2 Measurement Stability*

Pre1 to Pre2 measurement stability assessments are shown in Table 2. These assessments include standard error of the measurement, Pearson correlations, and Student's t-tests. All of the Pearson *r* values were statistically significant indicating that the Pre1 and Pre2 values were highly correlated. This indicates that the rank of subjects on each value remained fairly constant, however, Pearson *r* values cannot detect systemic error. Student's t tests were used to compare means between Pre1 and Pre2 and it was found that %fat, fat total, and lean total mean values were statistically significant between Pre1 and Pre2. This shows that these values were subject to variability from Pre1 to Pre2. The standard error of the measurements varied by measurement. The standard error of the measurement quantifies the precision of individual measurements and the value is reported in the units in which the measurement is reported. For example, the standard error of the measurement for heart rate has a value of “1” which represents 1 bpm while the standard error of the measurement for diastolic blood pressure is “5” which represents 5 mmHg. Systolic blood pressure’s standard error of the measurement was higher than diastolic blood pressure’s standard error of the measurement. Femoral-tibialis posterior pulse wave velocity’s standard error of the measurement was higher than carotid-femoral pulse wave velocity’s standard error of the measurement. The standard error of the measurement for the three DXA-assessed body composition variables that the Student’s t tests showed were statistically significantly different from each other were higher than the standard error of the measurement for bone mineral content total which did not have means that differed from each other as assessed by Student’s t test. Regarding strength assessments, leg press strength showed the greatest standard error of the measurement and shoulder press strength showed the smallest standard error of the measurement. The upper body average functional score’s standard error of the measurement was slightly lower than the lower body average functional score’s standard error of the measurement.

**Table 2. Measurement Stability.**

| | | SEM | r | t |
|---|---|---|---|---|
| Cardiovascular | Systolic Blood Pressure (mmHg) | 10 | 0.763* | 0.111 |
| | Diastolic Blood Pressure (mmHg) | 5 | 0.757* | 0.888 |
| | Heart Rate (bpm) | 1 | 0.801* | -0.830 |
| | Carotid-Femoral Pulse Wave Velocity (m/s) | 0.9 | 0.916* | 1.624 |
| | Femoral-Tibialis Posterior Pulse Wave Velocity (m/s) | 1.5 | 0.225 | -0.628 |
| | Resting Forearm Blood Flow (ml/min/100 ml) | 1.85 | 0.524* | 0.172 |
| | Forearm Reactive Hyperemia Area Under the Curve (units) | 6.55 | 0.532* | 0.048 |
| | Forearm Reactive Hyperemia Peak (ml/min/100 ml) | 24.93 | 0.666* | -0.651 |
| Body Composition | Weight (kg) | 1.05 | 0.998* | -0.053 |
| | % Fat Total | 1.19 | 0.994* | 2.247* |
| | Fat Total (kg) | 1.49 | 0.999* | 2.344* |
| | Lean Total (kg) | 1.17 | 0.983* | -2.268* |
| | Bone Mineral Content Total (kg) | 0.12 | 0.971* | 0.495 |
| Strength (1 RM) | Leg Press (kg) | 12.82 | 0.865* | -0.134 |
| | Chest Press (kg) | 3.8 | 0.891* | -1.537 |
| | Leg Curl (kg) | 5.04 | 0.907* | -1.555 |
| | Shoulder Press (kg) | 2.97 | 0.884* | -1.482 |
| | Leg Extension (kg) | 5.78 | 0.936* | -1.155 |
| | Lat Pull-Down (kg) | 3.69 | 0.999* | -2.016 |
| Function | Lower Body Average Functional Score | 0.13 | 0.938* | -3.547 |
| | Upper Body Average Functional Score | 0.1 | 0.662* | -1.729 |

Pre1 to Pre2 measurement stability assessments. SEM, standard error of the measurement; *$p<0.05$.

*Pre/Post Assessments*

The assessments that were performed at only Pre and Post included the cardiovascular assessments (brachial blood pressure, carotid-femoral pulse wave velocity and femoral-tibialis posterior pulse wave velocity, resting forearm blood flow, and forearm reactive hyperemia), body composition assessment via DXA, and the upper and lower body functional questionnaires.

*Cardiovascular Assessments*

The mean values for the cardiovascular assessments are presented in Table 3 and in Figures 1, 4, 7, and 10. Systolic blood pressure did not change over time (p = 0.15) and no interaction (group x time) in systolic blood pressure response was found (p = 0.98). Systolic blood pressure did differ by group, however, as a significant (p<0.05) group effect was found (p = 0.01); older subjects possessed higher systolic blood pressure than did younger subjects (Table 3). Diastolic blood pressure also did not change over time (p = 0.84) and no significant interaction (group x time) was found (p = 0.18). Diastolic blood pressure also differed by group; the group effect was significant at p<0.05 (p = 0.04) with older subjects possessing higher diastolic blood pressure than younger subjects (Table 3). Heart rate showed no significant (p<0.05) time effect (p = 0.93), group x time interaction (p = 0.37) or group effect (p = 0.72; Table 3).

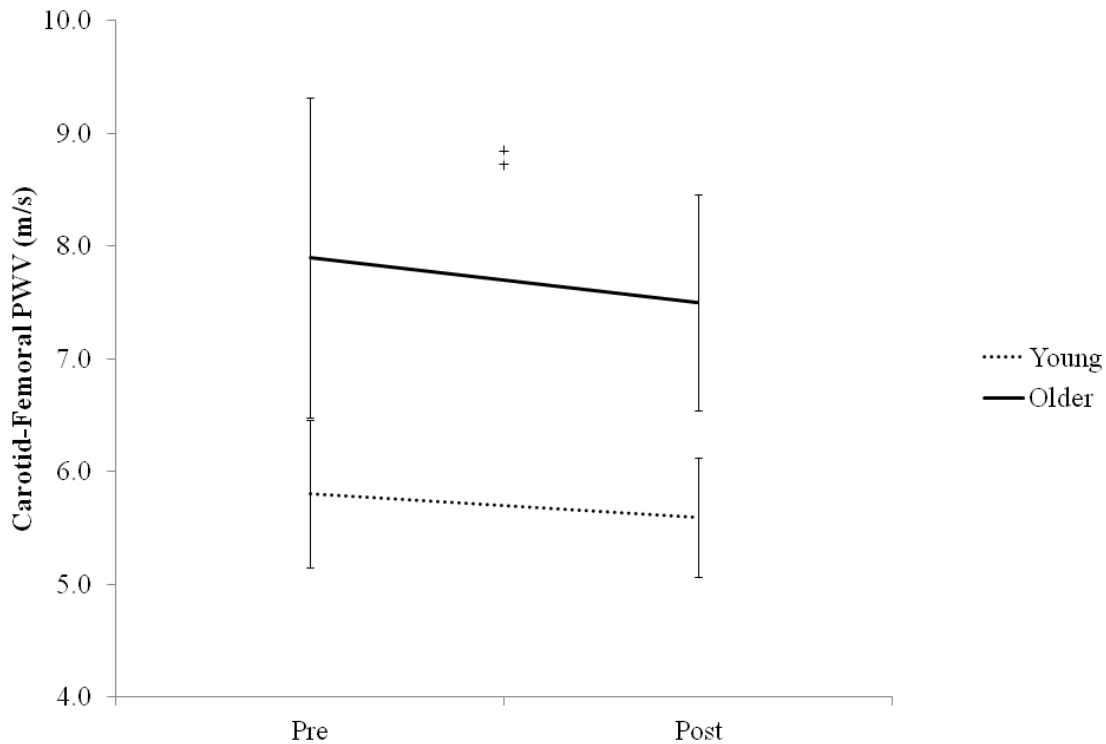
Carotid-femoral pulse wave velocity only showed a significant (p<0.05) group effect (p = 0.00) with older subjects having a higher carotid-femoral pulse wave velocity than younger subjects (Table 3 & Figure 1). No significant (p<0.05) carotid-femoral pulse wave velocity interaction (p = 0.55) or time effect (p = 0.08) was found (Table 3 & Figure 1). No significant (p<0.05) effects were found for femoral-tibialis posterior pulse wave velocity (time effect, p = 0.37; interaction, p = 0.24; group effect, p = 0.81; Table 3 & Figure 4). Likewise, no significant (p<0.05) effects were found for resting forearm blood flow (time effect, p = 0.11; interaction, p = 0.19; group effect, p = 0.25; Table 3). A significant (p<0.05) interaction was found for peak forearm blood flow ($p = 0.04$). Older subjects saw an increase in peak forearm blood flow following training while no effect was seen in younger subjects (Table 3 & Figure 7). Total hyperemia was found to significantly ($p<0.05$) increase as a time effect was found ($p = 0.00$), however, no group effect ($p = 0.26$) or interaction ($p = 0.25$) was found (Table 3 & Figure 10).

## Table 3. Cardiovascular Assessments

| | | | Pre | | Post | |
|---|---|---|---|---|---|---|
| Blood Pressure (mmHg) | Systolic‡ | Young | 108 | 8 | 110 | 10 |
| | | Older | 119 | 13 | 121 | 14 |
| | Diastolic‡ | Young | 69 | 6 | 71 | 8 |
| | | Older | 76 | 6 | 74 | 8 |
| Resting Heart Rate (bpm) | | Young | 64 | 8 | 65 | 10 |
| | | Older | 64 | 10 | 63 | 8 |
| Pulse Wave Velocity (m/s) | Carotid-Femoral‡ | Young | 5.8 | 0.7 | 5.6 | 0.5 |
| | | Older | 7.9 | 1.4 | 7.5 | 1.0 |
| | Femoral-Tibialis Posterior | Young | 8.5 | 1.2 | 8.6 | 1.6 |
| | | Older | 9.0 | 1.5 | 8.3 | 1.3 |
| Forearm Blood Flow | Resting (ml/min/100 ml) | Young | 2.36 | 0.77 | 3.27 | 1.26 |
| | | Older | 3.20 | 1.93 | 3.30 | 0.96 |
| | Peak Flow (ml/min/100 ml)$ | Young | 21.72 | 5.07 | 21.36# | 4.24 |
| | | Older | 22.61 | 8.94 | 26.72† | 9.54 |
| | Total Hyperemia (units)* | Young | 70.69 | 17.34 | 84.18 | 27.61 |
| | | Older | 78.87 | 32.82 | 104.03 | 55.48 |

Cardiovascular Assessments; n = 16 young, n = 13 older; AUC, area under the curve; Results are presented as Mean and Standard Deviation;*$p<0.05$ time effect; ‡$p<0.05$ group effect; \$$p<0.05$ time by group interaction; #$p<0.05$ from Older; †$p<0.05$ from Pre

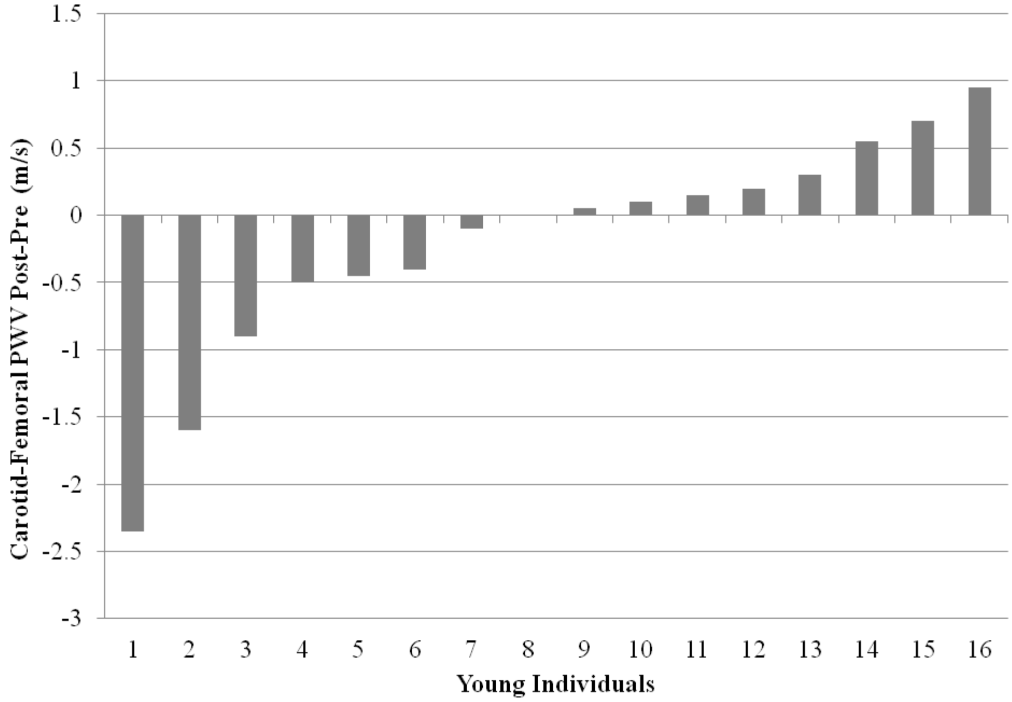
**Figure 1. Carotid-Femoral Pulse Wave Velocity**




Data are presented as mean and standard deviation; PWV, pulse wave velocity; ‡$p<0.05$ group effect.

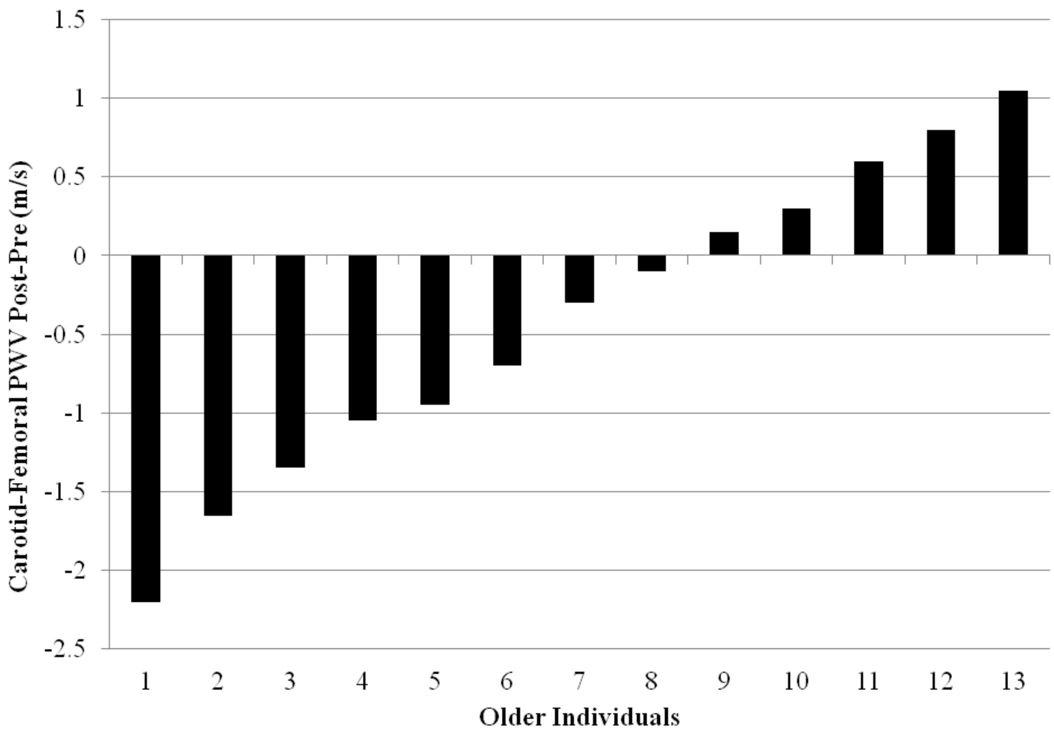
As previously stated, the mean carotid-femoral PWV values show no change from Pre to Post (Figure 1). However, examining individual values shows that the response of each subject differed. Carotid-femoral PWV increased in eight young subjects, decreased in seven young subjects, and did not change in one young subject (Figure 2). Thus, an approximately equal number of young subjects increased as decreased their carotid-femoral PWV. Carotid-femoral PWV increased in five older subjects and decreased in eight older subjects (Figure 3). Thus, a decrease in carotid-femoral PWV was seen slightly more often in older subjects than was an increase in carotid-femoral PWV. In both young and older, the magnitude of the individual decreases appeared greater than the magnitude of the individual increases.

**Figure 2. Individual Changes for Young in Carotid-Femoral Pulse Wave Velocity**



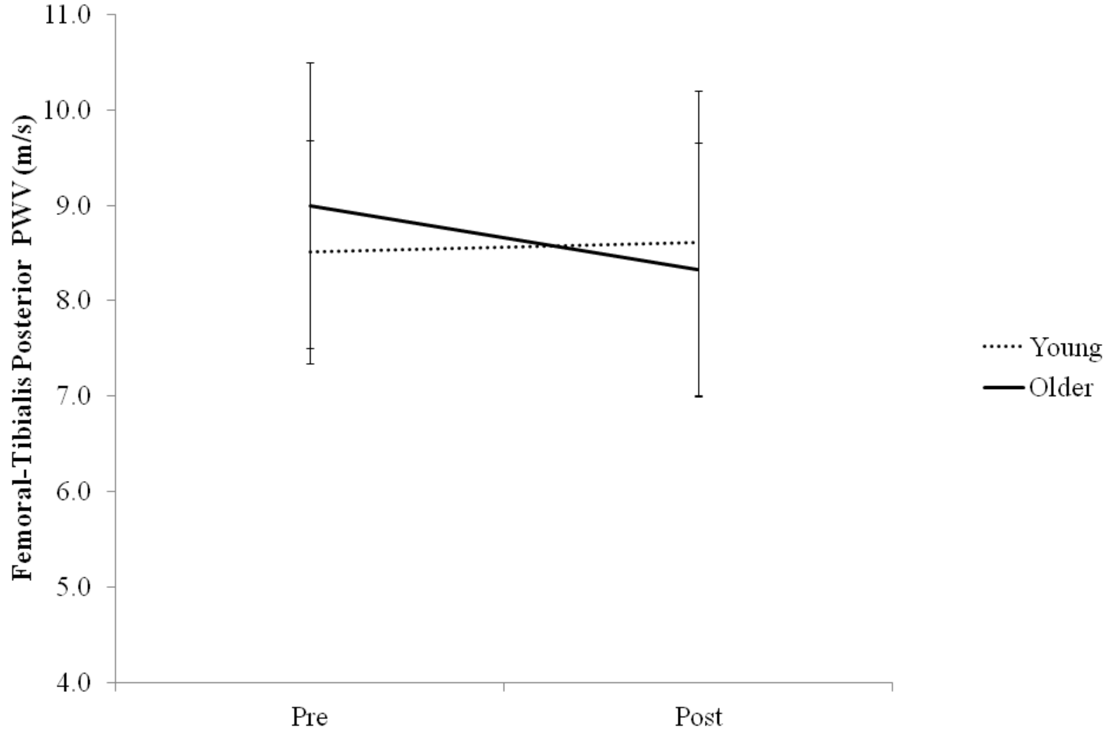

Individual changes from Pre to Post for young. Negative value indicates a decrease in Carotid-Femoral PWV over the course of the training. PWV, pulse wave velocity.

**Figure 3. Individual Changes for Older in Carotid-Femoral Pulse Wave Velocity**




Individual changes from Pre to Post for older. Negative value indicates a decrease in Carotid-Femoral PWV over the course of the training. PWV, pulse wave velocity.

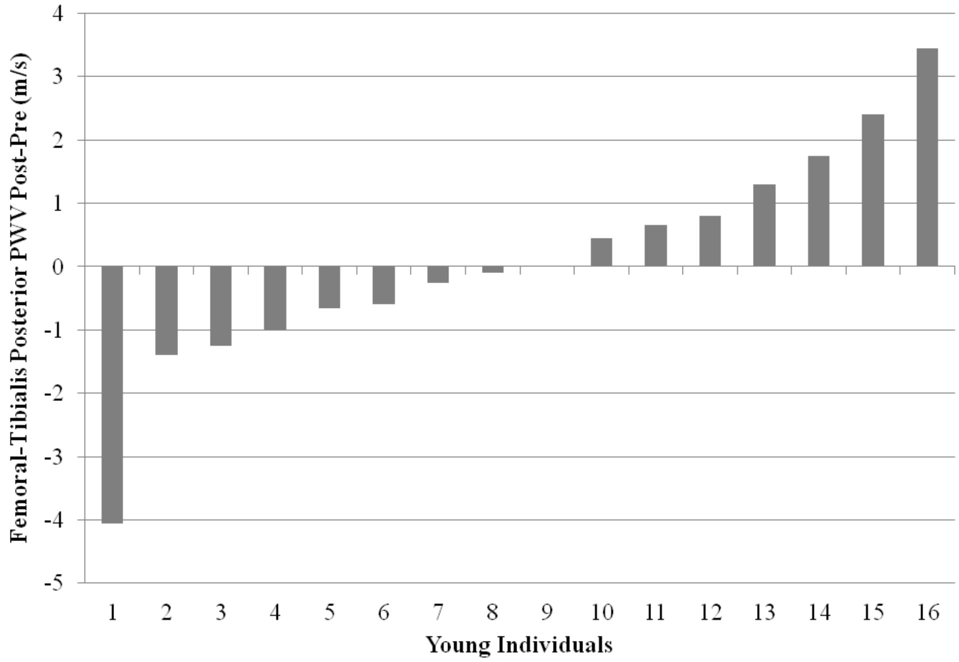
**Figure 4. Femoral-Tibialis Posterior Pulse Wave Velocity**




Data are presented as mean and standard deviation; PWV, pulse wave velocity.

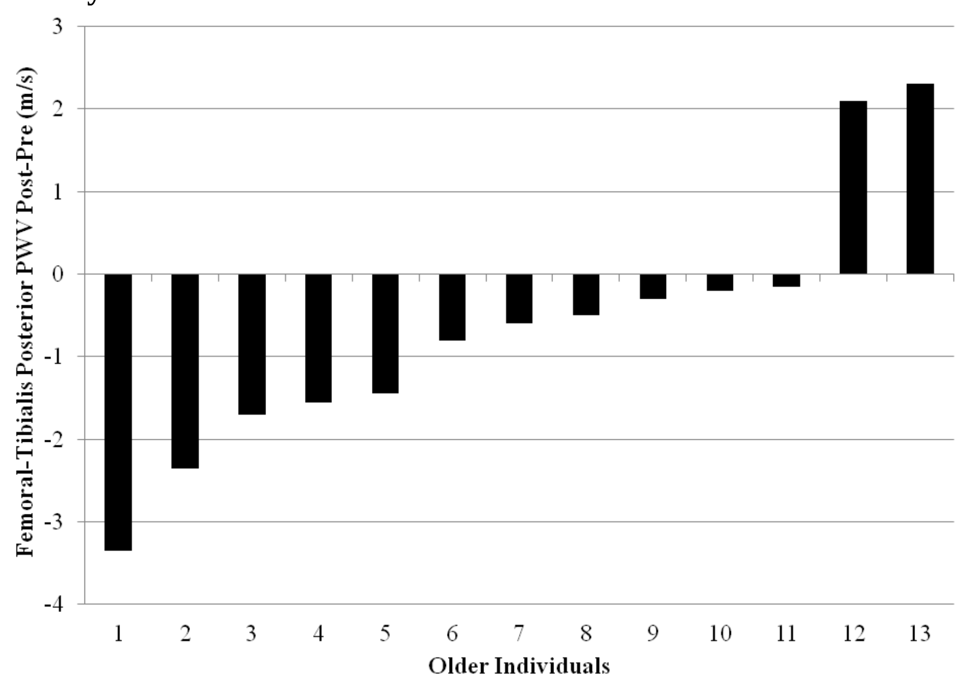
Femoral-tibialis posterior PWV also did not appear to change when looking at mean values (Figure 4). When looking at individual values, femoral-tibialis posterior PWV decreased in eight young subjects, increased in seven young subjects, and did not change in one young subject (Figure 5). Thus, approximately an equal number of young subjects increased as decreased their femoral-tibialis posterior PWV. Femoral-tibialis posterior PWV decreased in eleven older subjects and increased in two older subjects (Figure 6). Thus, the majority of the older subjects decreased their femoral-tibialis posterior PWV.

**Figure 5. Individual Changes for Young in Femoral-Tibialis Posterior Pulse Wave Velocity**



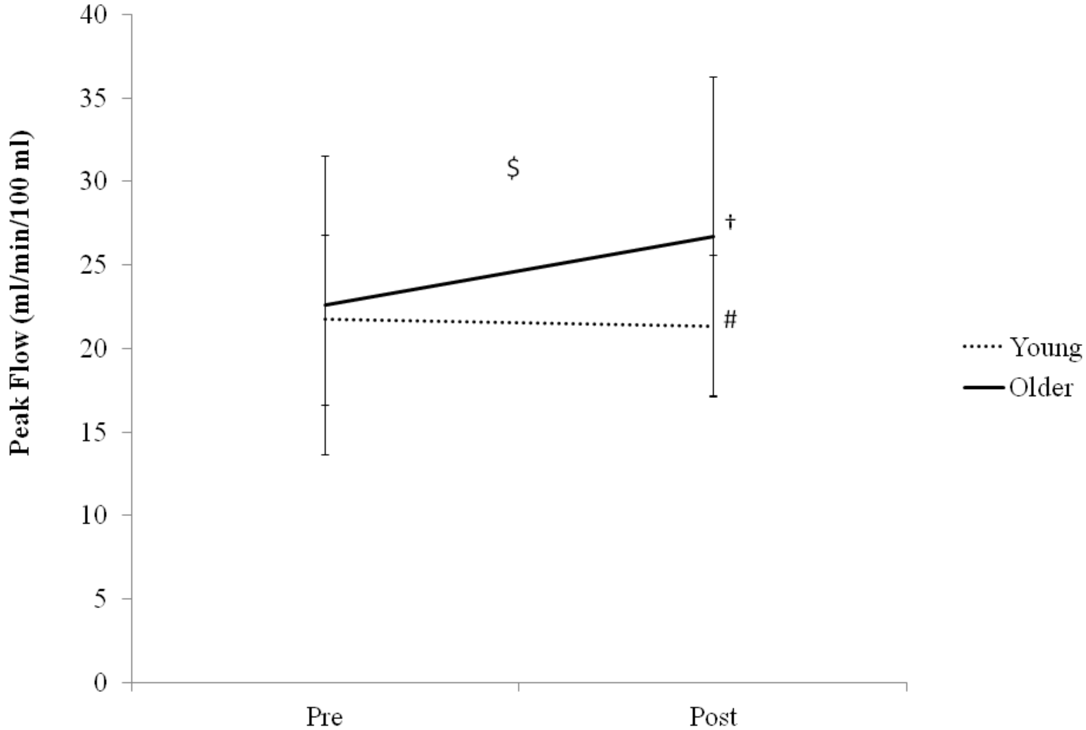

Individual changes from Pre to Post for young. Negative value indicates a decrease in Femoral-Tibialis Posterior PWV over the course of the training. PWV, pulse wave velocity.

**Figure 6. Individual Changes for Older in Femoral-Tibialis Posterior Pulse Wave Velocity**




Individual changes from Pre to Post for older. Negative value indicates a decrease in Femoral-Tibialis Posterior PWV over the course of the training. PWV, pulse wave velocity.

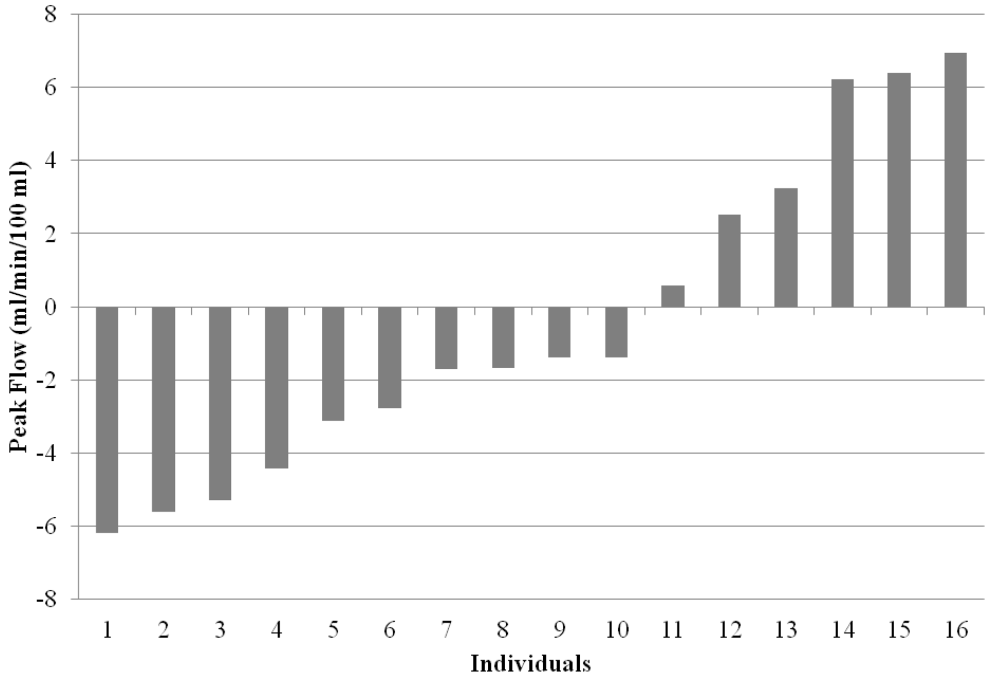
**Figure 7. Peak Forearm Blood Flow During Reactive Hyperemia**




Data are presented as mean and standard deviation; \$p<0.05 group x time interaction; #p<0.05 from older; †p<0.05 from Pre.

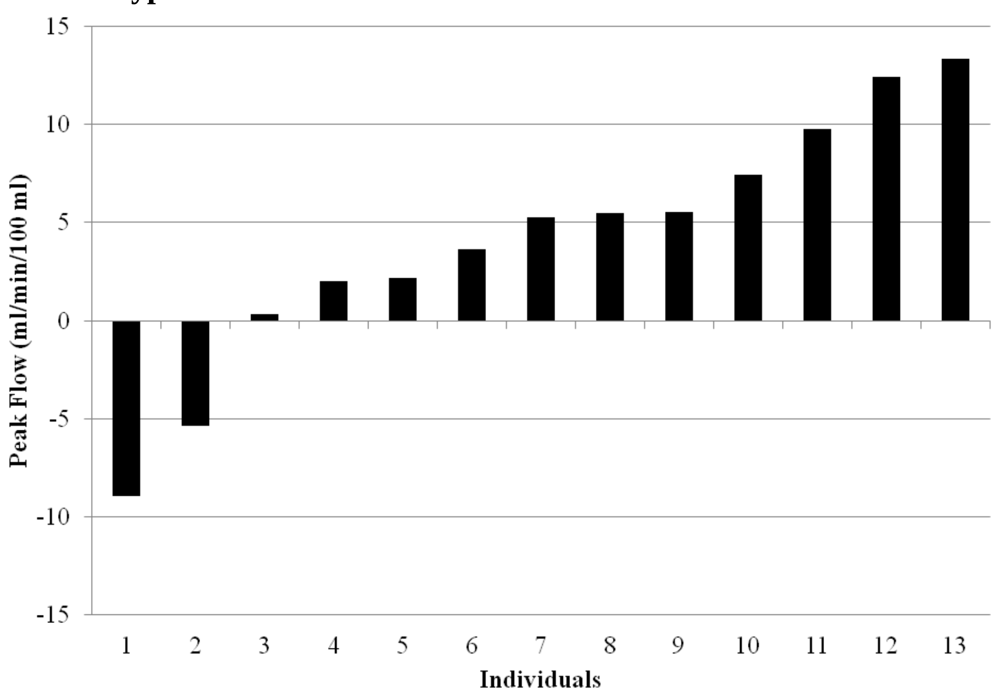
Peak flow mean changes are described in the above paragraph describing Table 3 and are shown graphically in Figure 7. Peak flow decreased in ten young subjects and increased in six young subjects (Figure 8). Thus, slightly more young subjects increased peak flow than decreased peak flow. Peak flow decreased in two and increased in eleven older subjects (Figure 9). Thus, many more older subjects increased peak flow than decreased peak flow.

**Figure 8. Individual Changes for Young in Peak Forearm Blood Flow During Reactive Hyperemia**



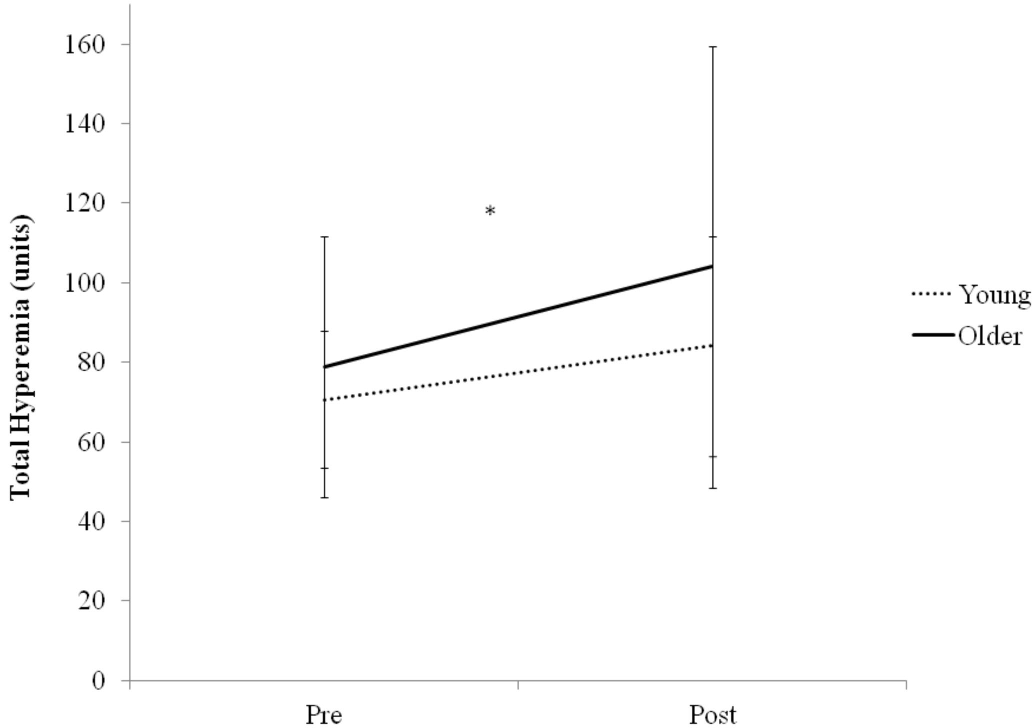

Individual changes from Pre to Post for young. Negative value indicates a decrease in Peak Flow over the course of the training.

**Figure 9. Individual Changes for Older in Peak Forearm Blood Flow During Reactive Hyperemia**




Individual changes from Pre to Post for older. Negative value indicates a decrease in Peak Flow over the course of the training.

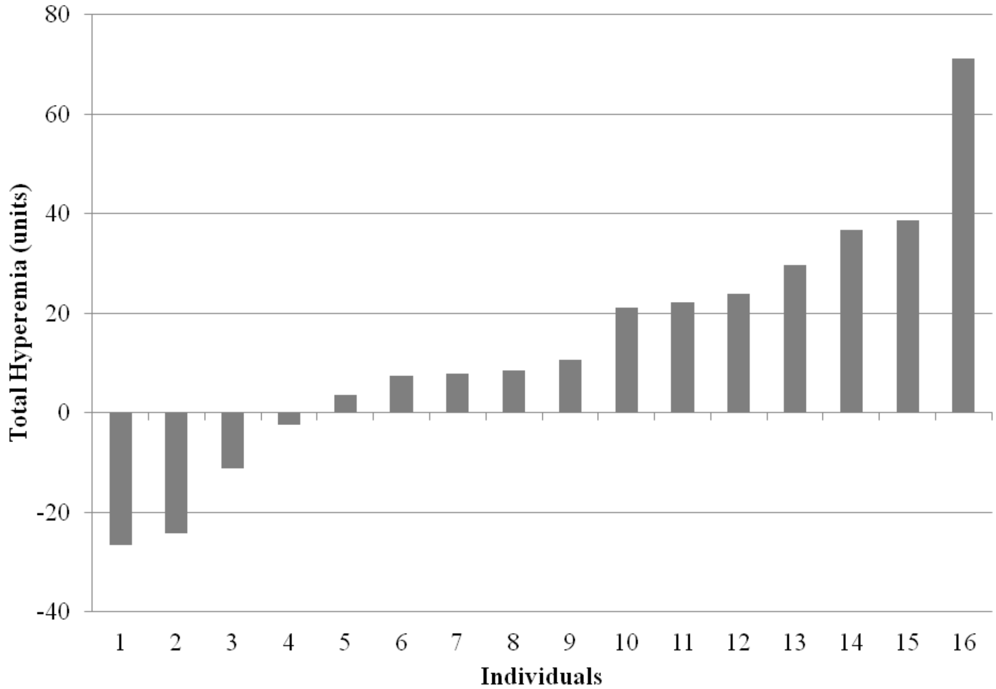
**Figure 10. Total (Area Under the Curve) Forearm Hyperemia**




Data are presented as mean and standard deviation; *p<0.05 time effect.

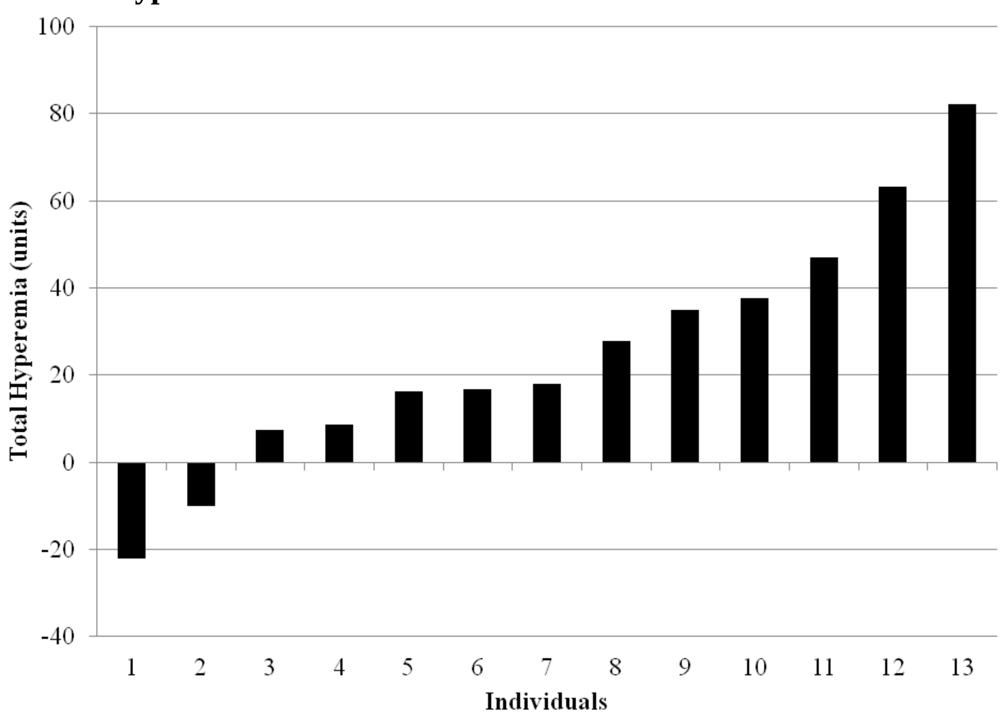
Total hyperemia mean responses are also described in the paragraph describing Table 3 and are shown graphically in Figure 10. Total hyperemia decreased in four young subjects and increased in fourteen young subjects (Figure 11). Thus, many more young subjects increased total hyperemia than decreased total hyperemia. Total hyperemia decreased in two older subjects and increased in eleven older subjects (Figure 12). Thus total hyperemia increased much more often than it decreased in older subjects.

**Figure 11. Individual Changes for Young in Total (Area Under the Curve) Forearm Hyperemia**




Individual changes from Pre to Post for young. Negative value indicates a decrease in Total Hyperemia over the course of the training.

**Figure 12. Individual Changes for Older in Total (Area Under the Curve) Forearm Hyperemia**




Individual changes from Pre to Post for older. Negative value indicates a decrease in Total Hyperemia over the course of the training.

*DXA-Assessed Body Composition*

Body composition, as assessed by DXA, is presented in Table 4. The following DXA-assessed body composition variables changed significantly ($p<0.05$) over time: total body mass (kg) ($p = 0.00$), total fat (%) ($p = 0.04$), leg fat (%) ($p = 0.00$), arm bone-free lean mass (kg) ($p = 0.00$), and leg bone-free lean mass (kg) ($p = 0.00$). Total fat (%) and leg fat (%) decreased over time. Total body mass (kg), arm bone-free lean mass (kg) and leg bone-free lean mass (kg) all increased over time.

The following DXA-assessed body composition variables showed significant ($p<0.05$) differences between groups: total body mass (kg) ($p = 0.00$), total fat (%) ($p = 0.00$), arm fat (%) ($p = 0.00$), leg fat (%) ($p = 0.00$), trunk fat (%) ($p = 0.00$), total fat mass (kg) ($p = 0.03$), arm fat mass (kg) ($p = 0.00$), leg fat mass (kg) ($p = 0.00$), and trunk fat mass (kg) ($p = 0.00$). In all cases, the older group possessed a greater quantity (kg) or greater percentage (%) of fat than did the younger group. No interactions (group x time) were found for any DXA-assessed body composition variable although lean arm mass (kg) almost showed an interaction ($p = 0.054$).

**Table 4. DXA-Assessed Body Composition**

| | | | Pre | | Post | |
|---|---|---|---|---|---|---|
| Body Mass (kg)*‡ | | Young | 66.0 | 11.9 | 66.8 | 11.7 |
| | | Older | 82.7 | 17.0 | 83.4 | 17.9 |
| Fat (%) | Total*‡ | Young | 33.3 | 8.7 | 32.6 | 8.2 |
| | | Older | 43.9 | 5.4 | 43.5 | 5.9 |
| | Arms‡ | Young | 31.1 | 9.1 | 30.3 | 8.5 |
| | | Older | 43.2 | 7.9 | 42.9 | 8.3 |
| | Legs*‡ | Young | 36.2 | 7.6 | 35.6 | 7.4 |
| | | Older | 45.6 | 5.8 | 44.5 | 6.0 |
| | Trunk‡ | Young | 33.9 | 10.3 | 33.2 | 9.7 |
| | | Older | 45.4 | 5.9 | 45.4 | 6.6 |
| Fat Mass (kg) | Total‡ | Young | 22.4 | 9.0 | 22.2 | 8.6 |
| | | Older | 36.7 | 11.5 | 36.6 | 11.9 |
| | Arms‡ | Young | 2.2 | 1.0 | 2.2 | 0.9 |
| | | Older | 3.8 | 1.0 | 3.6 | 1.2 |
| | Legs‡ | Young | 8.4 | 2.7 | 8.5 | 2.7 |
| | | Older | 13.0 | 4.1 | 12.8 | 4.3 |
| | Trunk‡ | Young | 11.1 | 5.4 | 10.8 | 5.2 |
| | | Older | 19.1 | 6.8 | 19.3 | 6.9 |
| BMC-Free Lean Mass (kg) | Total | Young | 40.0 | 5.4 | 39.9 | 8.4 |
| | | Older | 42.6 | 6.1 | 43.2 | 6.8 |
| | Arms* | Young | 4.2 | 0.7 | 4.5 | 0.8 |
| | | Older | 4.2 | 0.4 | 4.3 | 0.5 |
| | Legs* | Young | 13.5 | 2.1 | 14.0 | 2.4 |
| | | Older | 14.0 | 2.4 | 14.5 | 2.9 |
| | Trunk | Young | 19.3 | 2.5 | 19.6 | 2.4 |
| | | Older | 21.2 | 3.8 | 21.3 | 3.9 |
| BMC (kg) | Total | Young | 2.7 | 0.4 | 2.7 | 0.4 |
| | | Older | 2.7 | 0.3 | 2.7 | 0.3 |
| | Arms | Young | 0.3 | 0.1 | 0.3 | 0.1 |
| | | Older | 0.3 | 0.1 | 0.3 | 0.1 |
| | Legs | Young | 1.0 | 0.2 | 1.0 | 0.2 |
| | | Older | 1.0 | 0.1 | 1.0 | 0.1 |
| | Trunk | Young | 0.9 | 0.1 | 0.9 | 0.1 |
| | | Older | 0.8 | 0.2 | 0.9 | 0.2 |

DXA-Assessed Body Composition; BMC, bone mineral content; Results are presented as Mean and Standard Deviation; n = 16 young, 13 older; *$p<0.05$ time effect; ‡$p<0.05$ group effect

**Table 5. Functional Assessments**

| | | Pre | | Post | |
|---|---|---|---|---|---|
| Upper Body Average Functional Score* | Young (n = 16) | 2.9 | 0.1 | 3.0 | 0.0 |
| | Older (n = 13) | 2.8 | 0.2 | 2.9 | 0.1 |
| Lower Body Average Functional Score*‡ | Young (n = 16) | 3.8 | 0.2 | 3.9 | 0.1 |
| | Older (n = 13) | 3.6 | 0.4 | 3.8 | 0.3 |

Functional Assessments; Results are presented as Mean and Standard Deviation;*$p<0.05$ time effect; ‡$p<0.05$ group effect

*Functional Assessments*

Functional assessments are presented in Table 5. Both young and older subjects improved functional abilities as a significant ($p < 0.05$) time effect was found for both upper ($p = 0.00$) and lower ($p = 0.00$) body function. There were group differences in lower body function ($p = 0.04$) but not upper body function ($p = 0.09$); younger individuals were more functional, as reported by the lower body functional assessment, than were older individuals, and the upper body functional assessment showed similar functional scores between young and older subjects.

*Weekly Assessments*

The weekly assessments included ultrasound muscle and fat thickness, thigh skinfolds, and a thigh circumference. Results from the seven measured ultrasound muscle sites, the eight measured ultrasound fat sites, the one 50% thigh circumference, and the calculated estimations of muscle CSA (both the method of Moritani and deVries and the Housh multiple regression method) are presented.

**Table 6. Muscle Thickness**

| | | Pre | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | Week 8 | Post |
|---|---|---|---|---|---|---|---|---|---|---|
| Q 50 (cm)* | Young | 4.93 0.57 | $5.03^{\dagger}$ 0.54 | $5.16^{\#}$ 0.51 | $5.21^{\#}$ 0.52 | 5.26 0.53 | 5.29 0.51 | $5.42^{\#}$ 0.56 | 5.41 0.51 | 5.46 0.51 |
| | Older | 4.70 0.51 | $4.83^{\dagger}$ 0.48 | $4.87^{\#}$ 0.48 | $4.93^{\#}$ 0.49 | 4.97 0.51 | 4.97 0.54 | $5.09^{\#}$ 0.52 | 5.13 0.36 | 5.20 0.45 |
| Q 70 (cm)* | Young | 3.93 1.04 | 4.05 0.86 | $4.29^{\dagger\#}$ 0.82 | 4.27 0.83 | 4.32 0.82 | $4.46^{\#}$ 0.82 | 4.45 0.88 | 4.48 0.81 | 4.45 0.82 |
| | Older | 3.60 0.62 | 3.90 0.47 | $3.97^{\dagger\#}$ 0.41 | 4.14 0.53 | 4.08 0.47 | $4.11^{\#}$ 0.50 | 4.17 0.43 | 4.18 0.40 | 4.17 0.41 |
| H 50 (cm)* | Young | 4.06 0.63 | $4.27^{\dagger}$ 0.58 | 4.34 0.66 | $4.37^{\#}$ 0.65 | 4.46 0.70 | $4.49^{\#}$ 0.78 | $4.63^{\#}$ 0.73 | 4.60 0.76 | 4.66 0.68 |
| | Older | 3.74 0.54 | $3.83^{\dagger}$ 0.62 | 3.89 0.58 | $4.03^{\#}$ 0.55 | 4.06 0.52 | $4.19^{\#}$ 0.45 | $4.27^{\#}$ 0.41 | 4.33 0.41 | 4.33 0.42 |
| H 70 (cm)*‡ | Young | 4.27 0.64 | $4.37^{\dagger}$ 0.60 | 4.52 0.58 | 4.59 0.59 | 4.71 0.55 | 4.72 0.61 | 4.74 0.62 | $4.96^{\#}$ 0.51 | 4.94 0.50 |
| | Older | 3.75 0.51 | $3.86^{\dagger}$ 0.51 | 3.88 0.57 | 3.94 0.58 | 4.00 0.47 | 4.05 0.51 | 4.21 0.57 | $4.32^{\#}$ 0.57 | 4.31 0.57 |
| Delt (cm)$ | Young | $1.82^{\&}$ 0.37 | $1.96^{\&\dagger}$ 0.31 | 2.05 0.29 | $2.04^{\&}$ 0.27 | $2.12^{\&\#}$ 0.30 | $2.20^{\#}$ 0.31 | 2.26 0.27 | $2.23^{\&\#}$ 0.30 | $2.14^{\&}$ 0.30 |
| | Older | 2.26 0.61 | $2.33^{\dagger}$ 0.62 | 2.32 0.54 | 2.45 0.63 | 2.47 0.55 | 2.42 0.65 | 2.48 0.63 | $2.63^{\#}$ 0.63 | 2.66 0.53 |
| Chest (cm)* | Young | 1.56 0.35 | 1.61 0.38 | $1.59^{\dagger}$ 0.43 | 1.63 0.35 | 1.75 0.33 | 1.82 0.36 | 1.75 0.47 | 1.65 0.29 | 1.56 0.30 |
| | Older | 1.65 0.43 | 1.68 0.45 | $1.85^{\dagger}$ 0.48 | 1.87 0.46 | 1.95 0.50 | 1.88 0.55 | 1.96 0.51 | 1.89 0.53 | 1.87 0.45 |
| Sub (cm) | Young | 1.88 0.50 | 1.88 0.44 | 1.91 0.37 | 1.87 0.35 | 1.88 0.41 | 1.80 0.37 | 1.85 0.33 | 1.82 0.39 | 1.65 0.29 |
| | Older | 1.69 0.42 | 1.77 0.50 | 1.80 0.45 | 1.80 0.26 | 1.89 0.26 | 1.82 0.34 | 1.84 0.46 | 1.80 0.48 | 1.84 0.46 |

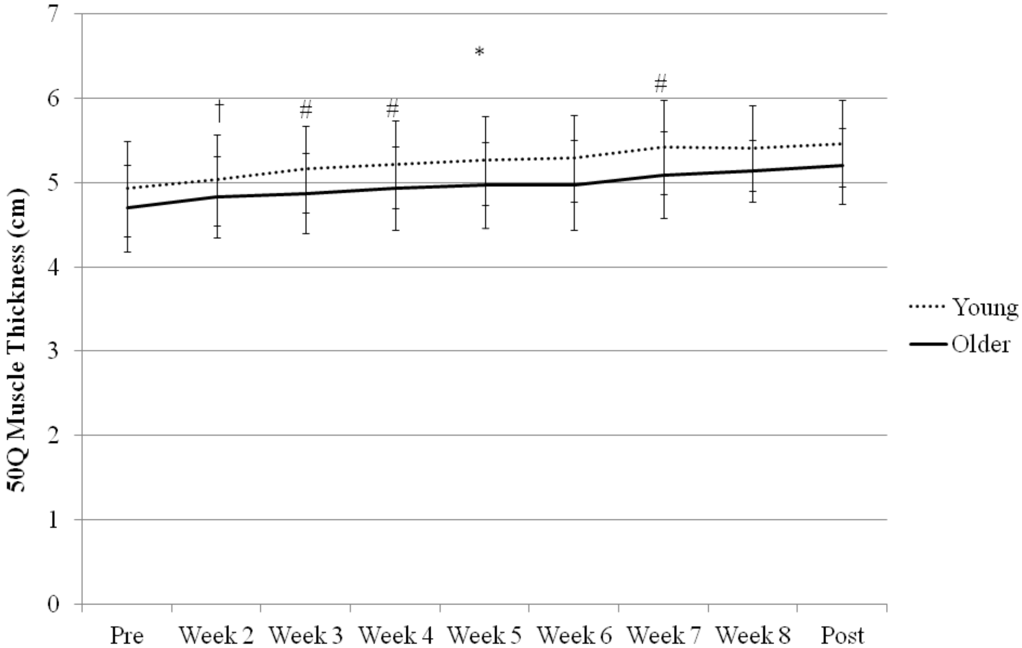
Muscle Thickness; n = 16 young, 13 older; Q, Quadriceps; H, Hamstrings; 50, 50% vertical distance; 70, 70% vertical distance; Results are presented as Mean and Standard Deviation; *$p<0.05$ time effect; ‡$p<0.05$ group effect; \$$p<0.05$ time by group interaction; †$p<0.05$ from Pre (first instance only); #$p<0.05$ from previous week (pre excluded); &$p<0.05$ compared to older

*Muscle Thickness*

Muscle thickness for all muscles examined is presented in Table 6. One lower body muscle thickness, 50 % quadriceps, and one upper body muscle thickness, deltoid, are presented in figures (Figures 13 and 14, respectively).

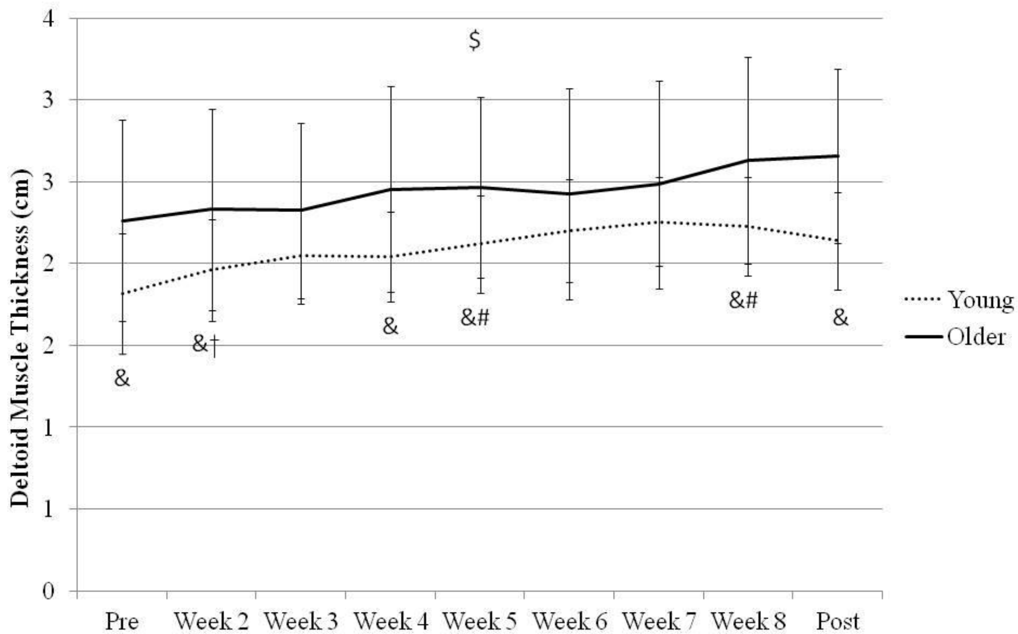
All muscle thicknesses, except for the subscapular muscle thickness, increased significantly ($p<0.05$) over time; the following p values were found for a time effect (or lack of a time effect) at each site: 50% quadriceps ($p = 0.00$), 70% quadriceps ($p = 0.00$), 50% hamstrings ($p = 0.00$), chest ($p = 0.00$) and subscapular ($p = 0.65$). A group effect, with the older group having greater muscle thickness than the young group, was found for the 70% hamstrings muscle thickness ($p = 0.00$). A group x time interaction was found for the change in deltoid muscle ($p = 0.02$); post hoc t-tests revealed many significant ($p<0.05$) differences between young and old at different time points although the increase from Pre to week 2 was significant ($p<0.05$) for both groups at week 2 (Table 6). Post-hoc t-tests revealed that significant ($p<0.05$) increases from Pre were found at week two for the 50% quadriceps ($p = 0.01$), 50% hamstrings ($p = 0.00$), and 70% hamstrings ($p = 0.04$) sites. Significant ($p<0.05$) increases from Pre, also determined with post-hoc t-tests, were seen at week three for the 70% quadriceps ($p = 0.00$) and chest ($p = 0.04$) sites.

**Figure 13. 50% Quadriceps Muscle Thickness**




Results are presented as Mean and Standard Deviation; Q, Quadriceps; 50, 50% vertical distance; *p<0.05 time effect; †p<0.05 from Pre (first instance only); #p<0.05 from previous week (pre excluded)

**Figure 14. Deltoid Muscle Thickness**




Results are presented as Mean and Standard Deviation; *p<0.05 time effect; ‡p<0.05 group effect; $p<0.05 time by group interaction; †p<0.05 from Pre (first instance only); #p<0.05 from previous week (pre excluded); &p<0.05 compared to older

**Table 7. Fat Thickness**

| | | Pre | | Week 2 | | Week 3 | | Week 4 | | Week 5 | | Week 6 | | Week 7 | | Week 8 | | Post | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Q 50 (cm)*‡ | Young | 1.51 | 0.53 | 1.51 | 0.53 | 1.54 | 0.53 | 1.46† | 0.46 | 1.46 | 0.45 | 1.46 | 0.48 | 1.39 | 0.44 | 1.33# | 0.48 | 1.32 | 0.47 |
| | Older | 2.30 | 0.74 | 2.29 | 0.72 | 2.22 | 0.69 | 2.16† | 0.73 | 2.09 | 0.69 | 2.15 | 0.71 | 2.10 | 0.73 | 2.00# | 0.77 | 2.02 | 0.78 |
| Q 70 (cm)*‡ | Young | 1.27 | 0.37 | 1.24 | 0.37 | 1.28 | 0.38 | 1.22† | 0.42 | 1.21 | 0.36 | 1.15 | 0.42 | 1.08 | 0.37 | 1.12 | 0.48 | 1.02 | 0.38 |
| | Older | 2.09 | 0.87 | 2.08 | 0.76 | 2.00 | 0.70 | 1.90† | 0.66 | 1.95 | 0.68 | 1.87 | 0.62 | 1.90 | 0.77 | 1.87 | 0.84 | 1.75 | 0.84 |
| H 50 (cm)*‡ | Young | 2.47 | 0.56 | 2.36 | 0.57 | 2.36† | 0.66 | 2.29 | 0.63 | 2.19 | 0.78 | 2.15 | 0.70 | 2.00 | 0.84 | 2.07 | 0.84 | 2.00 | 0.69 |
| | Older | 3.09 | 0.93 | 3.00 | 0.78 | 2.96† | 0.86 | 2.94 | 0.86 | 2.91 | 0.81 | 2.82 | 0.95 | 2.98 | 1.01 | 2.88 | 1.16 | 2.87 | 1.11 |
| H 70 (cm)*‡ | Young | 1.61 | 0.48 | 1.60 | 0.53 | 1.60 | 0.59 | 1.51 | 0.52 | 1.48 | 0.50 | 1.38† | 0.53 | 1.44 | 0.55 | 1.30 | 0.42 | 1.24# | 0.46 |
| | Older | 2.16 | 0.68 | 2.00 | 0.68 | 1.83 | 0.55 | 1.89 | 0.56 | 2.00 | 0.62 | 1.92† | 0.73 | 1.92 | 0.73 | 1.99 | 0.74 | 1.82# | 0.72 |
| Delt (cm)*‡ | Young | 0.79 | 0.49 | 0.77 | 0.52 | 0.80 | 0.55 | 0.80 | 0.57 | 0.71 | 0.53 | 0.81†# | 0.54 | 0.81 | 0.49 | 0.72# | 0.49 | 0.68 | 0.49 |
| | Older | 1.26 | 0.62 | 1.33 | 0.63 | 1.22 | 0.70 | 1.25 | 0.61 | 1.31 | 0.70 | 1.35†# | 0.65 | 1.35 | 0.69 | 1.19# | 0.64 | 1.22 | 0.60 |
| Chest (cm)‡ | Young | 0.38 | 0.23 | 0.43 | 0.28 | 0.37 | 0.24 | 0.46 | 0.26 | 0.41 | 0.26 | 0.40 | 0.28 | 0.42 | 0.27 | 0.39 | 0.25 | 0.42 | 0.27 |
| | Older | 0.68 | 0.46 | 0.72 | 0.42 | 0.72 | 0.35 | 0.67 | 0.35 | 0.66 | 0.33 | 0.53 | 0.25 | 0.63 | 0.27 | 0.55 | 0.24 | 0.59 | 0.29 |
| Sub (cm)‡ | Young | 0.81 | 0.62 | 0.73 | 0.46 | 0.67 | 0.39 | 0.60 | 0.44 | 0.65 | 0.49 | 0.64 | 0.58 | 0.65 | 0.50 | 0.64 | 0.56 | 0.63 | 0.48 |
| | Older | 1.54 | 1.03 | 1.44 | 1.08 | 1.58 | 1.14 | 1.45 | 1.05 | 1.16 | 0.78 | 1.48 | 1.19 | 1.47 | 1.14 | 1.53 | 1.14 | 1.41 | 1.09 |
| Visc (cm)* | Young | 1.03 | 0.64 | 1.00 | 0.55 | 1.04 | 0.60 | 0.97 | 0.50 | 0.81# | 0.56 | 0.95 | 0.47 | 0.95 | 0.45 | 0.91 | 0.46 | 0.82 | 0.37 |
| | Older | 1.20 | 0.51 | 1.26 | 0.52 | 1.30 | 0.52 | 1.25 | 0.52 | 1.24# | 0.39 | 1.10 | 0.37 | 1.10 | 0.42 | 1.11 | 0.33 | 1.18 | 0.40 |

Fat Thickness; n = 16 young, 13 older; Q, Quadriceps; H, Hamstrings; 50, 50% vertical distance; 70, 70% vertical distance; ; Delt, Deltoid; Sub, Subscapular; Visc, Visceral; Results are presented as Mean and Standard Deviation; *p<0.05 time effect; ‡p<0.05 group effect; $p<0.05 time by group interaction; †p<0.05 from Pre (first instance only); #p<0.05 from previous week (pre excluded); &p<0.05 compared to older

*Fat Thickness*

Fat thickness is presented in Table 7. Fat thickness significantly ($p<0.05$) decreased over time for the 50% quadriceps ($p = 0.00$), 70% quadriceps ($p = 0.00$), 50% hamstrings ($p = 0.01$), 70% hamstrings ($p = 0.01$), deltoid ($p = 0.01$), and visceral (p =

0.04) fat sites. Fat thickness did not significantly ($p<0.05$) change over time at the chest ($p = 0.08$) or subscapular ($p = 0.106$) sites. Post-hoc tests revealed the following significant ($p<0.05$) changes from Pre at the following weeks: 50% quadriceps fat at week four ($p = 0.02$), 50% hamstrings fat at week three ($p = 0.04$), 70% quadriceps fat at week four ($p = 0.03$), 70% hamstring fat at week six ($p = 0.01$), and deltoid fat at week six ($p = 0.04$). As previously stated, visceral fat showed a time effect over training, however, post-hoc t-tests showed no significant ($p<0.05$) time-point to Pre changes. The older group showed greater fat thickness than the young group as significant ($p<0.05$) group differences in fat thickness were found at all sites (50% quadriceps, $p = 0.00$; 70% quadriceps, $p = 0.00$; 50% hamstrings, $p = 0.00$; 70% hamstrings, $p = 0.02$; deltoid, $p = 0.02$; chest, $p = 0.03$; subscapular, $p = 0.01$) except visceral ($p = 0.15$).

**Table 8. Thigh Cross-Sectional Areas and Circumference**

| | | Pre | | Week 2 | | Week 3 | | Week 4 | | Week 5 | | Week 6 | | Week 7 | | Week 8 | | Post | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50% Thigh Circumference (cm)‡ | Young | 55.2 | 4.2 | 54.8 | 3.8 | 55.6 | 3.9 | 55.0 | 3.8 | 55.3 | 3.8 | 55.0 | 3.8 | 55.0 | 3.9 | 55.7 | 4.2 | 55.3 | 4.5 |
| | Older | 60.6 | 6.1 | 59.6 | 5.6 | 60.5 | 5.4 | 60.3 | 5.5 | 60.2 | 6.0 | 59.9 | 5.6 | 60.4 | 5.6 | 60.3 | 5.6 | 59.5 | 6.0 |
| M+D CSA ($cm^2$)$ | Young | 95.5 | 29.2 | 65.2& | 38.7 | 95.8& | 30.0 | 97.7& | 24.2 | 96.7& | 28.3 | 100.8 | 31.4 | 88.0# | 29.9 | 104.7 | 31.3 | 105.9 | 36.7 |
| | Older | 111.9 | 17.2 | 111.7 | 17.2 | 110.1 | 15.1 | 110.6 | 12.7 | 114.8 | 18.9 | 105.4 | 15.1 | 107.7 | 14.5 | 114.3 | 18.6 | 111.2 | 16.7 |
| HMR CSA ($cm^2$)‡ | Young | 233.0 | 19.6 | 213.6 | 66.6 | 234.8 | 18.3 | 232.5 | 17.4 | 233.8 | 17.4 | 232.5 | 17.7 | 231.9 | 18.3 | 235.6 | 19.7 | 233.6 | 21.0 |
| | Older | 258.0 | 28.0 | 253.3 | 25.8 | 257.8 | 25.0 | 256.5 | 25.6 | 256.2 | 27.7 | 254.7 | 25.7 | 257.2 | 25.9 | 256.7 | 25.7 | 253.0 | 27.6 |

Thigh cross-sectional areas (CSA) and circumference; M+D, Moritani and deVries; HMR, Housh multiple regression; n = 13 young, 12 older; Results are presented as Mean and Standard Deviation; ‡p<0.05 group effect; $p<0.05 time by group interaction; #p<0.05 from previous week; &p<0.05 compared to older

*Thigh Cross-sectional Area and 50% Circumference*

Thigh cross-sectional areas and 50% circumference are presented in Table 8. The 50% thigh circumference of the older subjects was greater than the 50% thigh circumference of the younger subjects. This was seen in the significant ($p<0.05$) group differences in 50% thigh circumference ($p = 0.02$). No time effect ($p = 0.22$) or interaction ($p = 0.59$) for 50% thigh circumference was seen. A significant ($p <0.05$) interaction was found for the Moritani and deVries CSA calculation ($p = 0.03$). Post-hoc t-tests revealed that values for young subjects were significantly ($p<0.05$) different from values for older subjects for weeks two, three, four, and five and young subjects showed a significant ($p = 0.00$) difference from week six to week seven. For the Housh multiple regression calculation, only a significant ($p<0.05$) group effect ($p = 0.01$) was seen (with the older subjects having a greater thigh CSA than the younger subjects) as the tested time effect ($p = 0.26$) and interaction ($p = 0.40$) were not significant ($p<0.05$). The two calculated assessments of cross-sectional area vary greatly between the two calculation methods and are likely not accurate estimates.

**Table 9. One-Repetition Maximums**

| | | Pre | | Week 2 | | Week 4 | | Week 6 | | Week 8 | | Post | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Leg Press (kg)*‡ | Young (n = 15) | 99.4 | 13.6 | 101.5† | 13.4 | 103.9 | 11.0 | 108.2 | 11.4 | 114.5# | 10.6 | 113.6 | 14.2 |
| | Older (n = 12) | 79.0 | 13.2 | 87.1† | 18.7 | 89.8 | 27.5 | 94.3 | 19.9 | 99.6# | 19.9 | 92.7 | 24.3 |
| Leg Extension (kg)*‡ | Young (n = 15) | 54.5 | 12.2 | 59.3† | 10.8 | 61.6 | 11.4 | 65.9# | 12.7 | 68.8# | 12.0 | 69.8 | 12.5 |
| | Older (n = 13) | 41.3 | 8.0 | 45.1† | 9.3 | 47.5 | 8.7 | 50.3# | 7.8 | 53.2# | 6.6 | 53.8 | 8.2 |
| Leg Curl (kg)*‡ | Young (n = 15) | 52.6 | 9.5 | 56.9† | 11.2 | 61.4# | 11.4 | 65.8# | 12.8 | 68.3# | 11.3 | 70.5 | 9.5 |
| | Older (n = 13) | 41.5 | 6.8 | 47.3† | 7.3 | 48.8# | 8.7 | 52.3# | 8.3 | 53.8# | 8.2 | 53.8 | 10.1 |
| Chest Press (kg)*‡ | Young (n = 15) | 29.3 | 5.7 | 29.0 | 6.0 | 31.5†# | 5.5 | 34.2# | 6.1 | 34.4 | 6.0 | 36.4 | 5.1 |
| | Older (n = 13) | 24.5 | 5.5 | 24.0 | 5.1 | 26.1†# | 4.7 | 28.4# | 4.6 | 29.9 | 6.0 | 28.8 | 6.4 |
| Shoulder Press (kg)* | Young (n = 15) | 22.0 | 3.9 | 22.2 | 3.4 | 23.9†# | 3.9 | 25.6# | 4.8 | 27.2# | 4.7 | 27.1 | 5.3 |
| | Older (n = 13) | 19.5 | 5.1 | 20.4 | 3.5 | 21.8†# | 5.0 | 23.4# | 4.7 | 25.7# | 5.1 | 23.8 | 4.8 |
| Lat Pull-Down (kg)* | Young (n = 15) | 39.7 | 5.2 | 40.4 | 6.0 | 42.1† | 7.6 | 44.3 | 8.5 | 47.0# | 6.9 | 45.9 | 6.5 |
| | Older (n = 13) | 36.5 | 4.4 | 37.8 | 3.1 | 39.3† | 5.7 | 38.4 | 6.1 | 42.7# | 6.4 | 42.9 | 5.7 |

One-Repetition Maximums; Results are presented as Mean and Standard Deviation; *p<0.05 time effect; ‡p<0.05 group effect; †p<0.05 from Pre (first instance only); #p<0.05 from previous week (pre excluded)

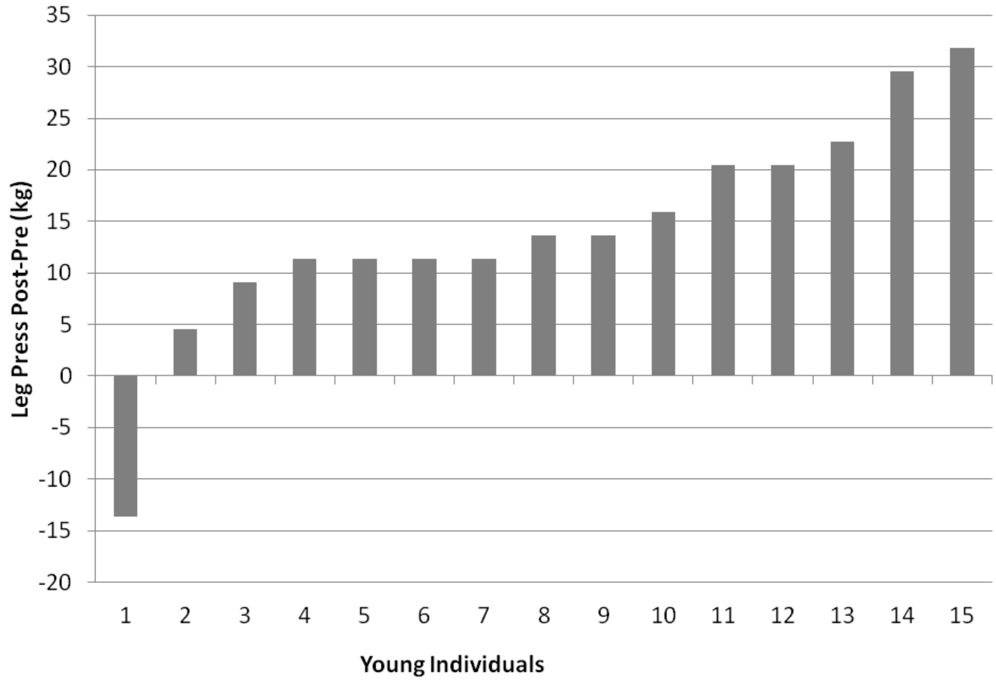
*One-Repetition Maximum Strength*

1-RM strength assessments are presented in Table 9. One lower body, leg press, and one upper body, lat pull-down, exercise are presented in Figures (Figure 27 and 28, respectively). Individual 1-RM strength responses are presented in Figures 15-26. One older subject could not perform the leg press 1-RM at one time-point and thus older n = 12 for leg press only. One young subject could not perform any 1-RMs at one time-point and thus young n = 15 at all time-points. 1-RMs increased significantly (p<0.05) in all exercises as was shown in a time effect with p = 0.00 for all exercises. Strength significantly (p<0.05) differed by group (with the young individuals being stronger than the older individuals) in the leg press (p = 0.00), leg extension (p = 0.00), leg curl (p =

0.00), and chest press ($p = 0.01$). Strength did not significantly ($p<0.05$) differ by group for the shoulder press ($p =0.12$) and the lat pull-down ($p = 0.09$). Post hoc t-tests revealed that significant ($p<0.05$) increases in strength occurred at week two for the lower body (leg press, $p = 0.02$; leg extension, $p = 0.00$; leg curl, $p = 0.00$) and week three for the upper body (chest press, $p = 0.00$; shoulder press, $p = 0.00$; lat pull-down, $p = 0.01$). Significant ($p<0.05$) differences for each exercise for one week compared to the previous week are shown in Table 9.

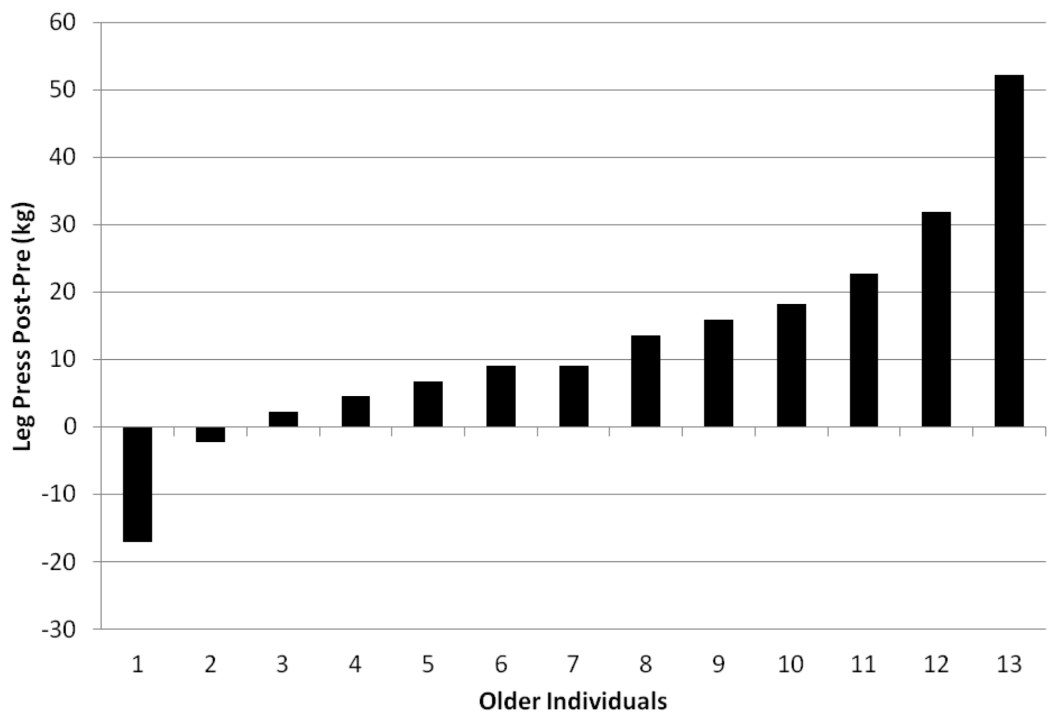
Multiple regression analysis examining initial strength and changes in muscle thickness from pre to post training as predictors of changes in strength from pre to post training showed that only the chest press and shoulder press strength changes were significantly predicted by initial strength on these exercises. Baseline chest press strength significantly ($p = 0.000$ for Beta = -.086) predicted change in chest press strength with training. Baseline shoulder press strength significantly ($p = 0.009$ for Beta = -0.491) predicted change in shoulder press strength with training. No other baseline strength values and no changes in muscle thickness from pre to post predicted changes in strength from pre to post.

**Figure 15. Individual Changes in Leg Press Strength for Young**



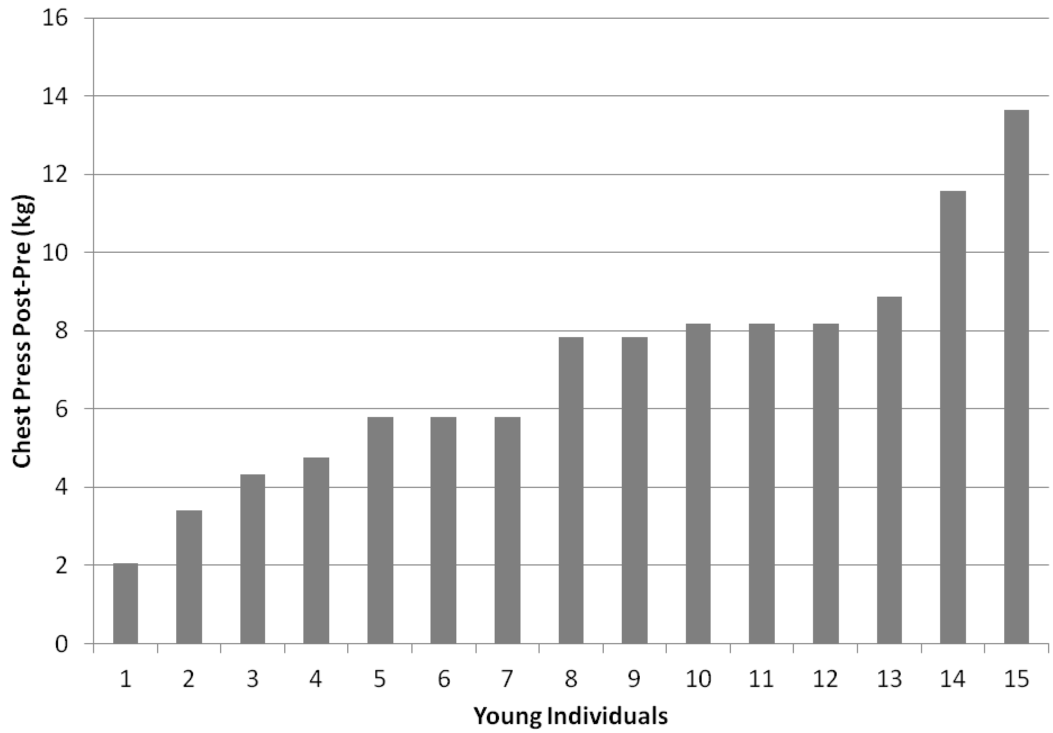

Individual changes in Leg Press 1-Repetition Maximum (1RM) from Pre to Post for young. A negative value indicates a decrease in 1RM over the course of the training.

**Figure 16. Individual Changes in Leg Press Strength for Older**



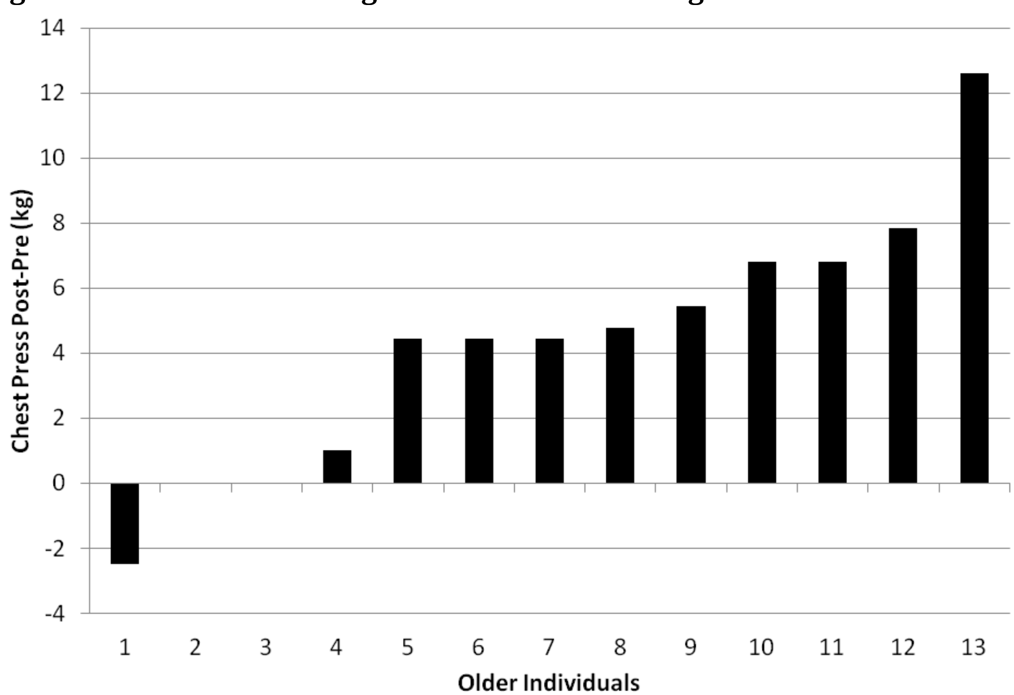

Individual changes in Leg Press 1-Repetition Maximum (1RM) from Pre to Post for older. A negative value indicates a decrease in 1RM over the course of the training.

**Figure 17. Individual Changes in Chest Press Strength for Young**



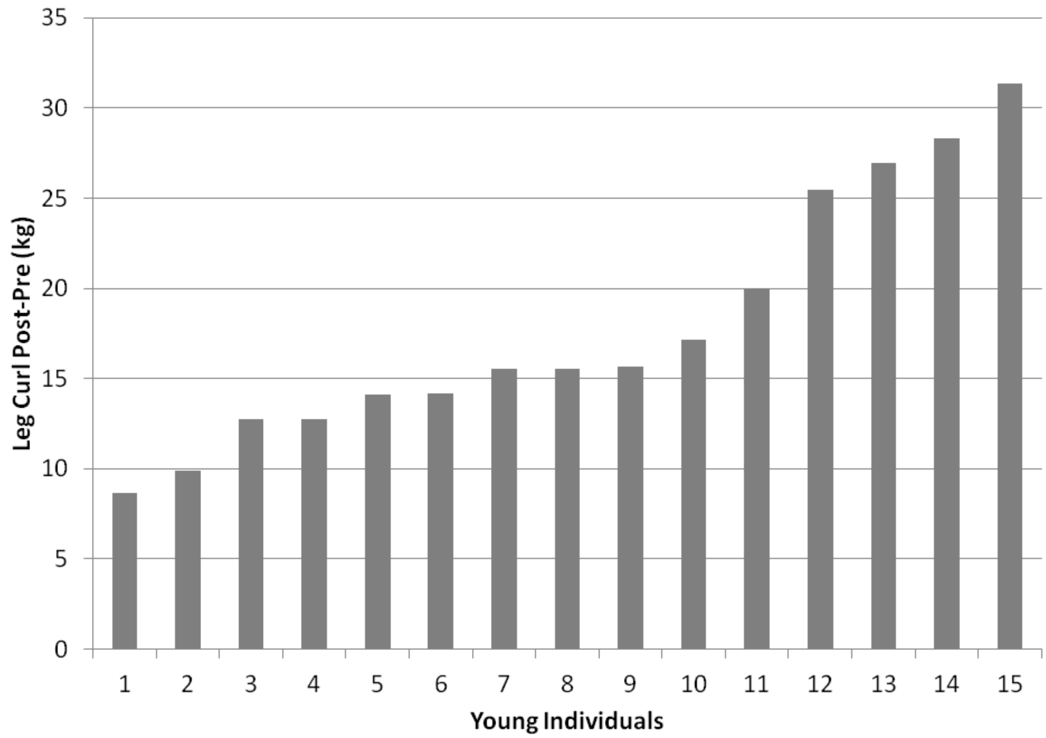

Individual changes in Chest Press 1-Repetition Maximum from Pre to Post for young.

**Figure 18. Individual Changes in Chest Press Strength for Older**



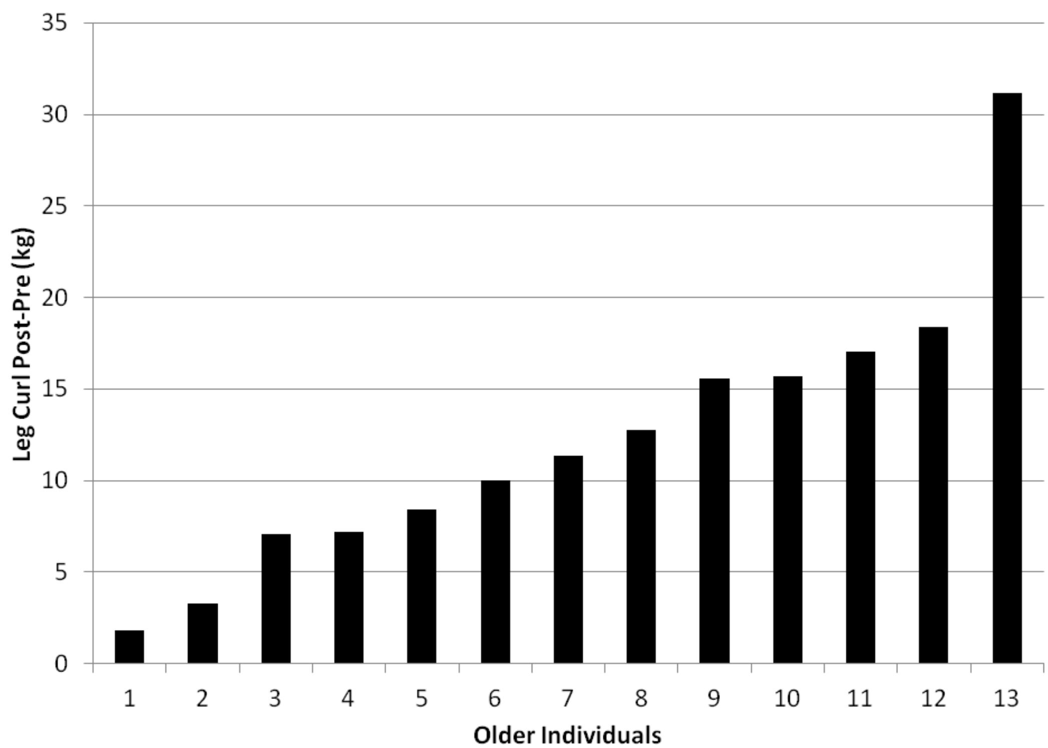

Individual changes in Chest Press 1-Repetition Maximum (1RM) from Pre to Post for older. A negative value indicates a decrease in 1RM over the course of the training.

**Figure 19. Individual Changes in Leg Curl Strength for Young**



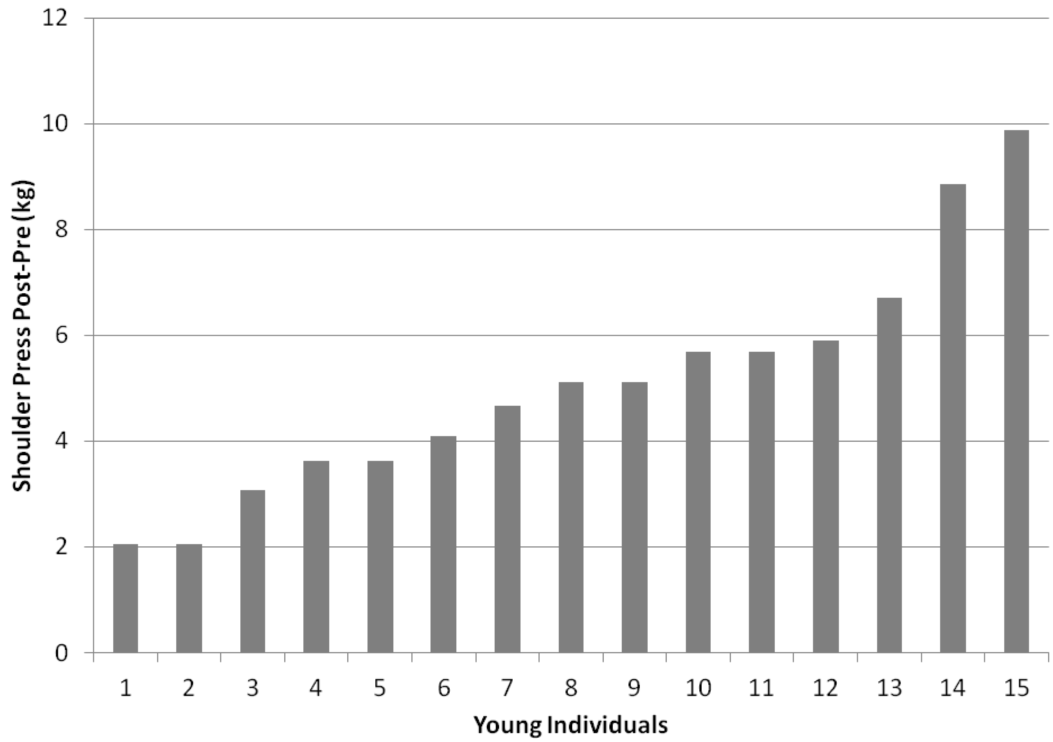

Individual changes in Leg Press 1-Repetition Maximum from Pre to Post for young.

**Figure 20. Individual Changes in Leg Curl Strength for Older**



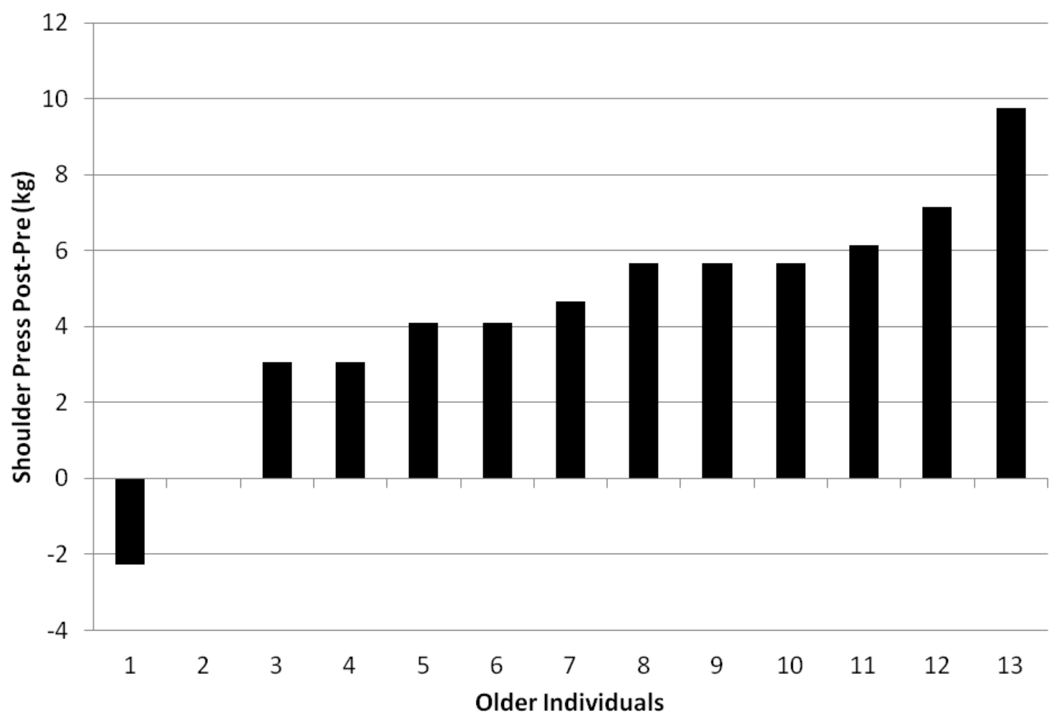

Individual changes in Leg Curl 1-Repetition Maximum (1RM) from Pre to Post for older.

**Figure 21. Individual Changes in Shoulder Press Strength for Young**



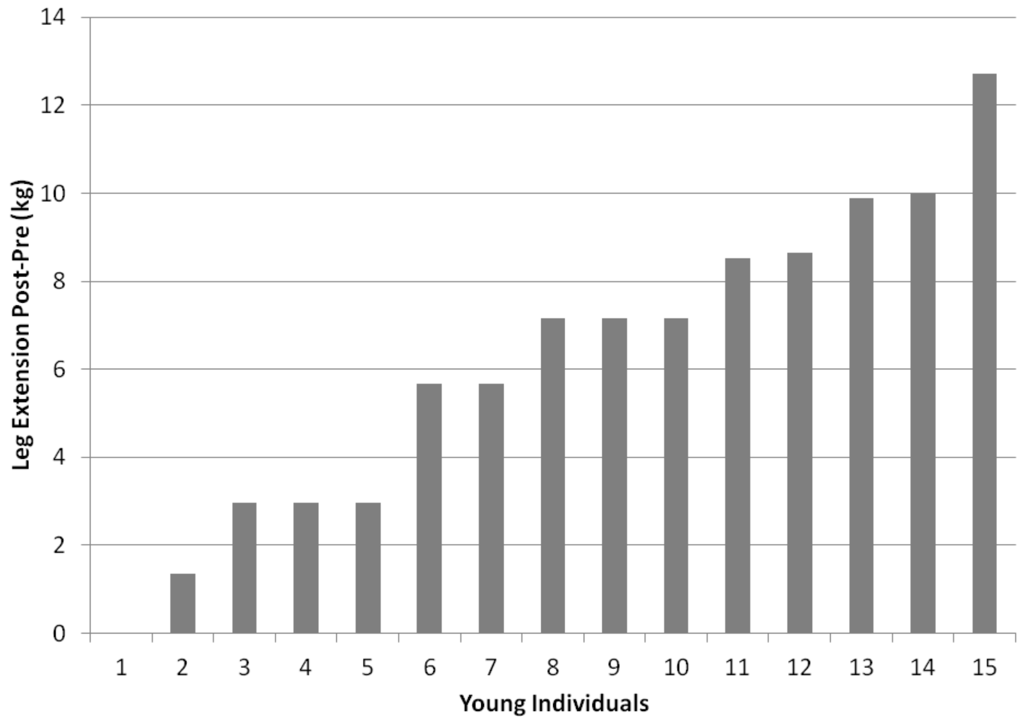

Individual changes in Shoulder Press 1-Repetition Maximum from Pre to Post for young.

**Figure 22. Individual Changes in Shoulder Press Strength for Older**



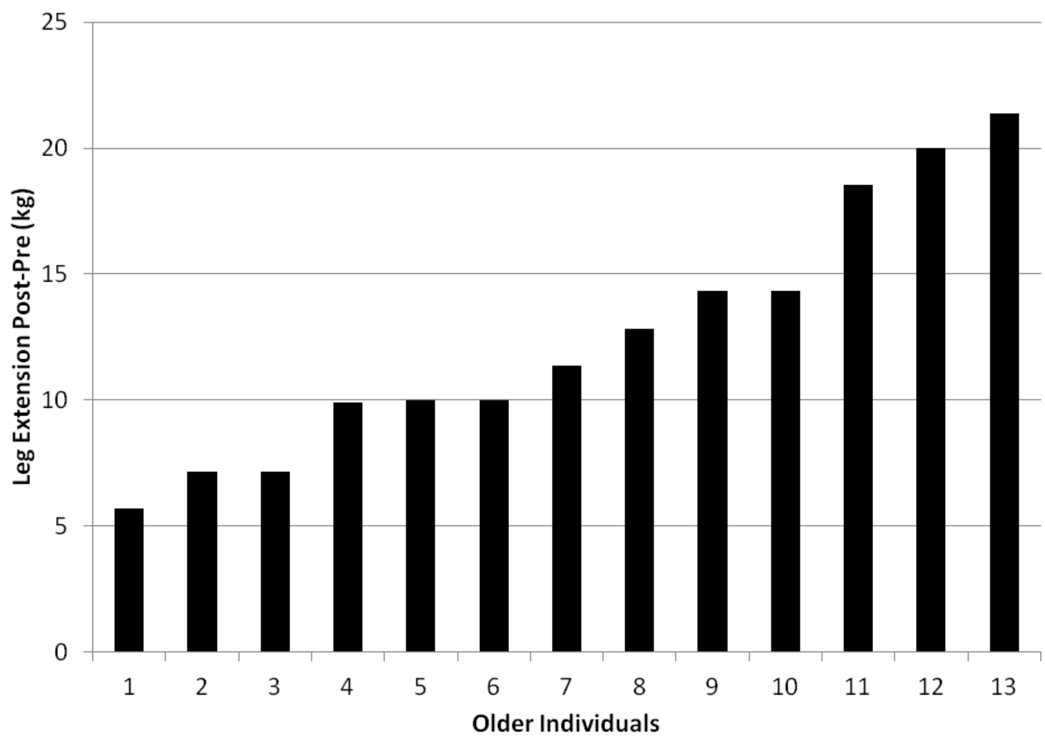

Individual changes in Shoulder Press 1-Repetition Maximum (1RM) from Pre to Post for older. A negative value indicates a decrease in 1RM over the course of the training.

**Figure 23. Individual Changes in Leg Extension Strength for Young**



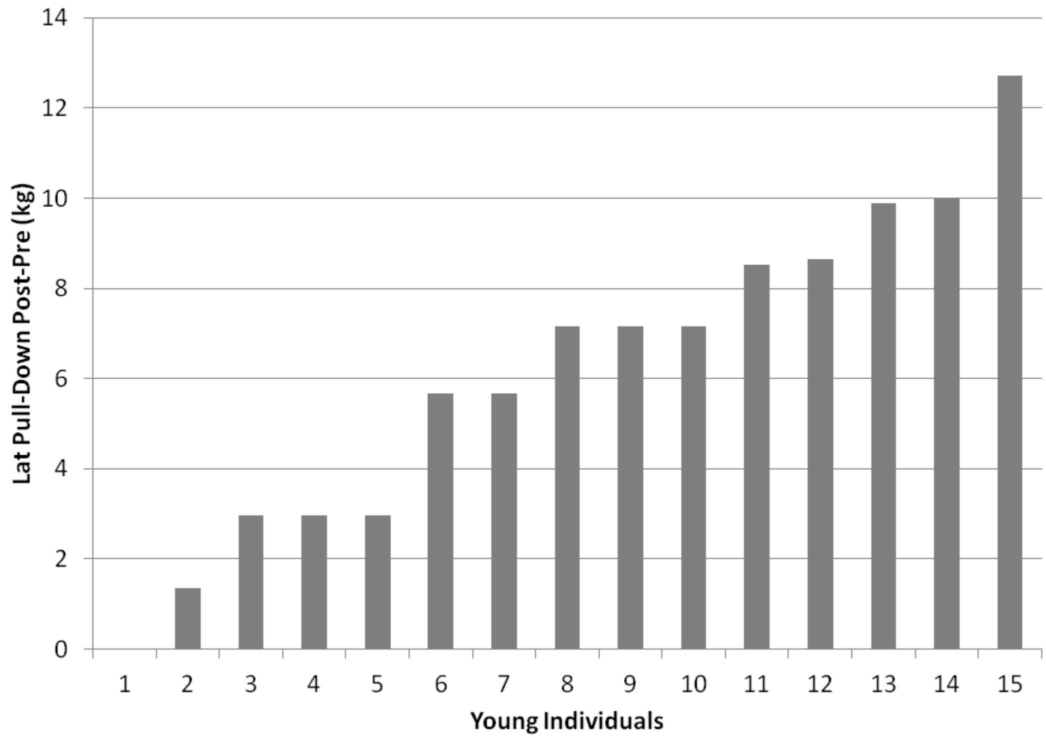

Individual changes in Leg Extension 1-Repetition Maximum from Pre to Post for young.

**Figure 24. Individual Changes in Leg Extension Strength for Older**



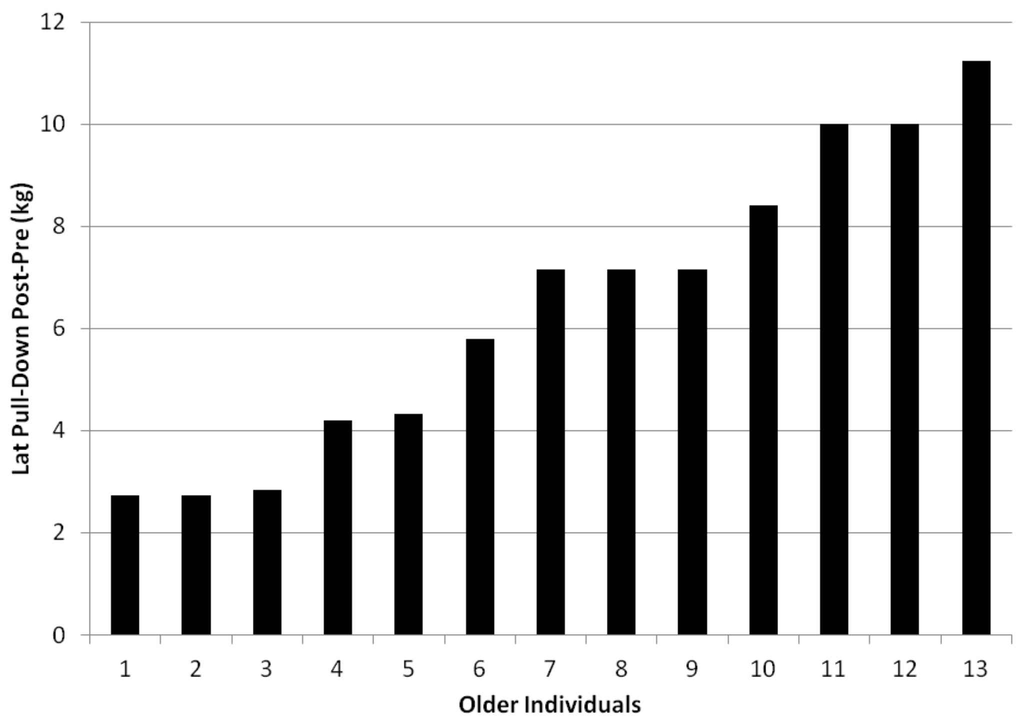

Individual changes in Leg Extension 1-Repetition Maximum from Pre to Post for older.

**Figure 25. Individual Changes in Lat Pull-Down Strength for Young**



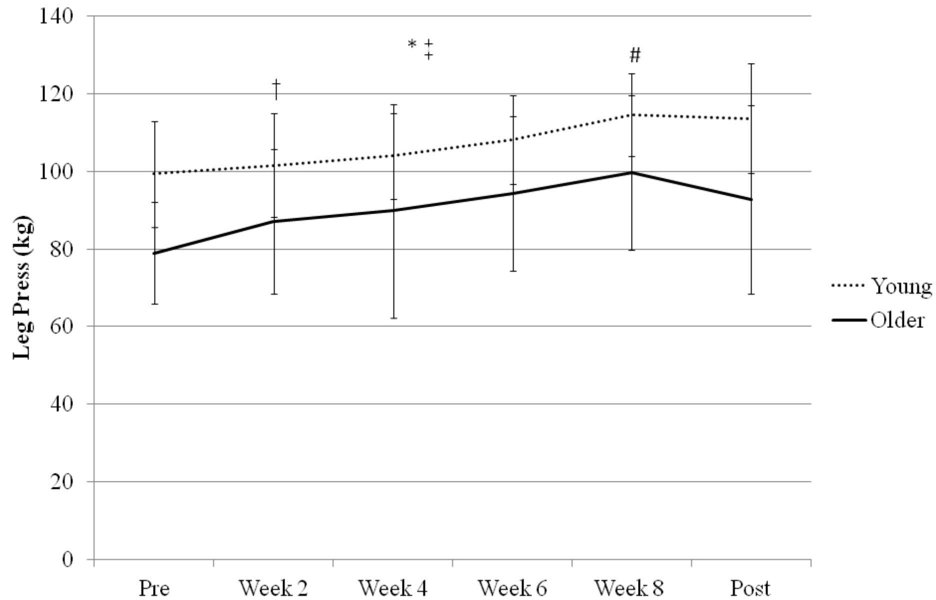

Individual changes in Lat Pull-Down 1-Repetition Maximum from Pre to Post for young.

**Figure 26. Individual Changes in Lat Pull-Down Strength for Older**



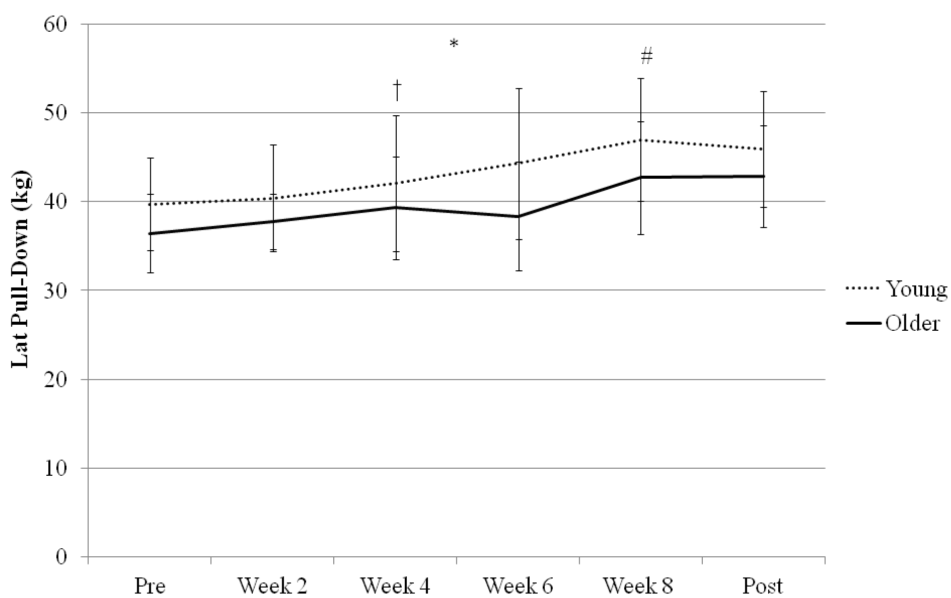

Individual changes in Lat Pull-Down 1-Repetition Maximum from Pre to Post for older.

**Figure 27. Leg Press One-Repetition Maximums**




Results are presented as Mean and Standard Deviation; *p<0.05 time effect; ‡p<0.05 group effect; †p<0.05 from Pre (first instance only); #p<0.05 from previous week (pre excluded)

**Figure 28. Lat Pull-Down One-Repetition Maximums**




Results are presented as Mean and Standard Deviation; *p<0.05 time effect; †p<0.05 from Pre (first instance only); #p<0.05 from previous week (pre excluded)

# Discussion

The main findings of this study can be divided into two categories: findings related to the time-course of muscle hypertrophy and findings related to arterial stiffness and blood flow. The main findings with regard to muscle thickness were that increases in muscle thickness were found in both young and older women at all measured sites except subscapular; a muscle thickness increase above baseline was first detectable following just one or two weeks of training; and a muscle thickness increase was first evident at the 50% Quadriceps, 50% Hamstrings, 70% Hamstrings, and Deltoid sites. The hypothesis that hypertrophy would be detected three to four weeks into high-intensity resistance training in both young and older women was thus not supported. Also, the hypothesis that hypertrophy would first be detected in the upper body and hamstrings was partially supported. The main findings with regard to arterial stiffness and blood flow were that neither carotid-femoral or femoral-tibialis posterior PWV changed significantly in either young or older subject when looking at mean values; total hyperemia increased in both young and older subjects; and peak flow increased in older subjects only. All arterial stiffness and blood flow measurements showed important variability in subjects' responses. The hypothesis that high-intensity resistance training would not increase arterial stiffness in either young or older women is supported by mean values, but only partially supported when individual responses are examined. The hypothesis that training would improve microvascular blood flow is also partially supported. The muscular and the vascular findings will now be discussed separately.

*Time-Course of Muscle Hypertrophy*

The increase in muscle size seen in this study occurred earlier than seen in previous studies examining early changes in muscle size with training [5,6,8]. In a study comparable to the present study, Abe et al. [8] found that women aged 25-50 years showed an increase in muscle thickness at the biceps following eight weeks of "intense" whole-body resistance training and at the triceps, chest, and 50% hamstring sites following six weeks of training. No quadriceps or 70% hamstring increase in muscle thickness were seen following the full twelve weeks of training involved in this study [8]. Several possible methodological differences between this study and the present study may explain these discrepancies in findings. First, ten of the twenty women subjects in the study by Abe et al. [8] performed only one set of each of the six exercises used; the remaining ten women performed three sets of each exercise, similar to the present study, however, subjects initially trained at 60-70% 1RM, a lower percentage than the 80% 1RM employed in the present study. Also, Abe et al. [8] required subjects to perform "8-12 repetitions maximum" for each set on each exercise; the present study required each subject to perform two sets that were very close to, if not at, 10RM and to perform as many repetitions as possible, which was often greater than 12 reps, on the last set. Although both types of training would be challenging for subjects, perhaps the rep scheme employed in the present study presented a greater muscular stimulus and thus led to the greater muscle thickness adaptations. Finally, and perhaps most importantly, the exercises employed in the present study generally involved more muscle groups per exercise than in the study by Abe et al. [8]. The study by Abe et al. [8] used only two lower body exercises (leg extension and leg curl, and no leg press as was used in the present study) and, although four upper body exercises were used, only two of these (chest press and seated row) were multi-joint upper body exercises as compared to the three upper body multi-joint exercises (shoulder press, lat pull-down, and chest press) employed in the present study. Supporting the idea that the resistance training protocol employed by Abe et al. [8] may not have been as muscle stimulating as the protocol employed in the present study are the differences in the increase in strength seen between the two studies. In the present study, strength increased on all lower body exercises by the second week of training (Table 9). Abe et al. [8] only measured lower body strength on the leg extension; this strength did not increase until the fourth week of training.

When DeFreitas et al. [6] examined the time-course of muscle hypertrophy in young men using peripheral computed tomography (pQCT) scanning, they found a detectable increase in muscle CSA following just two training sessions. In this study, muscle CSA was assessed immediately prior to the last training session of a week. The authors speculated that acute fluid accumulation within the muscle influenced this early detection of an increase in CSA and that, due to lack of a strength increase until week four of training, muscle CSA may only have truly increased around weeks three to four [6]. An increase in CSA following three weeks of training was also seen by Seynnes et al. [5].

In the present study, the investigators attempted to account for acute exercise-session-induced fluid accumulation by performing all weekly measurements prior to the first day of training for the week rather than prior to the last, thus allowing subjects an additional twenty-four hours of recovery compared to DeFreitas et al. [6]. It is possible that this recovery period was not great enough to diminish all acute muscle swelling however. As the increase in muscle thickness seen at the start of the second and third weeks of training was not large, there is a possibility that this small increase in thickness was actually merely edema. Poole et al. [7] showed that 50% quadriceps but not 50% hamstrings muscle thickness was elevated sixty minutes following high-intensity lower-body resistance exercise. However, Poole et al. [7] also found that thigh CSA, as assessed by peripheral quantitative computed tomography, was no different from baseline at twenty-four, forty-eight, seventy-two, or ninety-six hours post-exercise. This suggests that muscle swelling did not account for the increases in muscle thickness seen in the present study when subjects were measured approximately seventy-two hours after their last training session of the week. Also, strength was found to increase in the lower body during the second week of training and in the upper body during the fourth week of training (Table 9), again providing support to the idea that at least the lower body increases in muscle thickness in the present study represented true muscle hypertrophy adaptations (Table 6).

The general lack of a difference in the time-course of the muscle thickness increases between young and older women was not surprising. Literature in this area is conflicting. A study comparing young men and women (aged 20-30 years) and older men and women (65-75 years) found no differences in thigh and quadriceps muscle volume between either men and women or young and older subjects in response to six months of strength training [9]. Another study comparing similar groups training one leg on knee extension for nine weeks also found no difference in the quadriceps muscle volume response between young and older subjects [10]. A study comparing the CSA response of middle-aged men (42 ± 2 years) and women (39 ± 3 years) and older men (72 ± 3 years) and women (67 ± 3) to six months of strength training found that only older men were unable to significantly increase the CSA of the leg extensors following training [12]. Another study comparing young men and women (22-31 years) and older men and women (62-72 years) did find significant differences in the thigh CSA response to three months of strength training [11]. The findings of the present study, that the time-course of increasing muscle thickness differed only at the deltoid, are in line with the aforementioned conflicting findings from previous research.

Subscapular muscle thickness did not show an increase with training. As this site included muscle that would have been trained on the lat pull-down and lat pull-down strength was found to increase over time (Table 9), the authors speculate that this lack of an increase was due to measurement error. This site was more difficult to measure accurately due to the lack of a clear boney landmark (such as the femur or humerus) from which to measure the muscle thickness, and the diagonal nature of the image obtained. The chest muscle thickness measurements possessed the same short-comings (and chest press strength also increased over time; Table 9) so these measurements should be interpreted cautiously as well.

Strength changes over time generally showed that older adults were not as strong as the younger adults but they were still able to respond positively in strength (as well as in muscle mass increases) to the resistance exercise training as would be expected [37]. For example, in the leg press, young adults started at a 1-RM weight of 99.4 kg at Pre and progressed to a 1-RM weight of 113.6 kg by Post; on this same exercise, older adults started at a 1-RM weight of 79.0 kg at Pre and progressed to a 1-

RM weight of 92.7 kg at Post. Thus, although older adults were not as strong as the younger adults, they still were able to respond positively to the training by improving strength.

Interestingly, in the shoulder press and the lat pull-down, no differences in strength were seen between the two groups. The reasons for this lack of a difference on these exercises are unclear although speculations can be made. As stated previously, it was easier for most subjects to progress (increase weight) on the lower body exercises compared to on the upper body exercises. For example, leg curl strength increased from a Pre value of 52.6 kg (young) and 41.5 kg (older) to a Post value of 70.5 kg (young) and 53.8 kg (older) while shoulder press strength increased from 22.0 kg (young) and 19.5 kg (older) to 27.1 kg (young) and 23.8 kg (older). Thus, the young subjects increased leg curl strength by approximately 18 kg and the older subjects increased leg curl strength by approximately 12 kg while young subjects increased shoulder press strength by approximately 5 kg and the older subjects increased shoulder press strength by approximately 4 kg over the entire course of the training. These differences in strength increases in the upper body compared to the lower body were likely due to the greater strength of the lower body compared to the upper body and the effect of the increments by which weight could be increased on each machine. To illustrate, a two kilogram increase for a lower body exercise such as the leg curl would likely be overcome more easily than a two kilogram increase on an upper body exercise such as the shoulder press. Thus, it is speculated, based on the greater strength of the young subjects on the leg press, leg extension, leg curl, and chest press, that possibly the young subjects could have shown greater strength on the shoulder press and lat pull-down had small weight increments been available to more effectively distinguish the stronger lifters from the weaker lifters. With large weight increments, someone who could easily lift twenty-two kilograms, for example, but who could not move up to the next weight of twenty-four kilograms was not distinguished from someone who just barely managed to lift the twenty-two kilograms. Another possible explanation for the lack of a group difference in the lat pull-down and shoulder press is simply that it was a real lack of a difference, of course, and the older subjects were just as strong as the young subjects in these exercises. This second idea is supposed by the increase in deltoid muscle thickness (Table 6) seen in the older adults as well as the younger adults. Unfortunately, as it has already been stated, the lack of a subscapular muscle thickness increase is thought to be more a reflection of measurement error and not something of physiological significance.

With regard to DXA-assessed body composition changes, it was not surprising that tremendous changes were not seen as this was only an eight week training study. The results did support the idea that older adults are able to respond positively to strength training similarly to younger adults [3]. Overall, the changes that were seen were in the expected direction of change, however, with fat decreasing and bone-free lean mass increasing. Total % fat slightly decreased in young and old and by region this % fat decrease was only detectable in the legs. These % fat changes support what was seen with the ultrasound with regard to fat thickness where changes from Pre in fat thickness generally occurred earlier in the legs (50% quadriceps at week 4, 70% quadriceps at week 4, 50% hamstrings at week 3) than changes from Pre in the fat thickness of the arms (deltoid at week 6, chest and subscapular at no time-point).

Group differences were found for % fat at all sites with the older subjects possessing a greater % fat than the younger subjects. This difference could be thought of as a confounding factor in interpreting the results of the study as young subjects were in the mid to upper levels of body fatness while older subjects were clearly in the obese category [90]. However, older adults also possessed many other differences, that are generally associated with age, compared to younger adults: for example, they had higher blood pressure, less functional ability, and generally less muscular strength. Thus, to compare older adults who were identical in every physiological measurement to the younger adults would arguably confound the results more greatly by comparing a "standard" young group of women to an exceptionally healthy older group of women.

Bone-free lean mass of the arms and legs only (and not the total body or trunk) increased. This was thought to be due to the "limb-focused" nature of the training program: although subjects were encouraged to keep their body tight and set so as to lift with good form, which would thus engage the core of the body as well as the muscles directly performing the exercise, subjects were not always able to accomplish this. Also, obviously, all training was performed on machines which limits how well the core musculature can be employed in a limb-focused exercise [91]. Thus, it is logical that only the limbs showed an increase in bone-free lean mass and the trunk did not. The lack of group differences in bone-free lean body mass support what was found with the ultrasound muscle thickness measurements where no group differences were found (with the exception of the different response seen at the deltoid site). The lack of a change in BMC is thought to be due to the short nature of the study although as little as twelve weeks of high-intensity resistance training has been shown to increase BMC in older men and women [92].

*Vascular Responses to Exercise Training*

The vascular responses to the eight weeks of resistance exercise training are best interpreted by examining both the results of the statistical analyses and the individual responses. Important individual differences in responses were apparent in these measures.

Carotid-femoral and femoral-tibialis posterior PWV did not appear to change over time when mean values are statistically examined (Table 3 and Figures 1 through 4). Individual responses show a varied response to the training in both young and older subjects (Figures 2 and 3). Interestingly, all but two of the older subjects showed a decrease in femoral-tibialis posterior PWV (Figure 6). Previous work on arterial stiffness responses to resistance training is conflicting. In men, resistance training has been shown to increase arterial stiffness [17,24,25] or to show no change [26,27]. In women, resistance training has been shown to cause no change [14,18,19], an increase [13,22], and a decrease [16,20,21] in arterial stiffness. In studies involving both sexes, where no sex comparisons were made, responses likewise varied [15,17,26,93]. As only women were examined in the present study, only studies reporting results for women (as opposed to combined male and female results) will now be discussed.

The studies reporting increases in arterial stiffness examined women who were young only. Cortez-Cooper et al. [13] strength trained young women at a high-intensity for eleven weeks. Following training, carotid-femoral PWV increased by 0.42 m/s; however, carotid-femoral PWV increased by 0.56 m/s in their non-exercising control group [13]. This suggests that the observed increase in carotid-femoral PWV was mitigated by non-training related factors. No changes were seen in this study with peripheral PWV in either group. Okamoto et al. [22] strength trained young women with either eccentric only or concentric only biceps curls for eight weeks. Following training, brachial-ankle PWV increased in the concentric only group by ~1m/s while no change was seen in the eccentric only group [22]. This interesting finding suggests that other as yet unidentified variables related to resistance training may influence the arterial stiffness response following this type of training.

The three studies showing a decrease in arterial stiffness responses with resistance training involved women of an age comparable to the older women examined in the present study [16,20,21]. Williams et al. [21] strength trained men and women aged 60-75 years at a moderate-intensity and found that only the women (and not the men) showed a decrease in augmentation index, an indicator of arterial stiffness, following sixteen weeks of training. Okamoto et al. [16] strength trained premenopausal women aged 42-55 years in a home-based low-intensity program for ten weeks and found that brachial-ankle PWV decreased by ~0.8m/s following training. The women in the present study were postmenopausal, however, menopausal status does not relate to level of arterial stiffness when age and body mass index are controlled [94]. Ho et al. [20] strength trained overweight and obese women aged 43-59 years at a high-intensity for twelve weeks; similar to the present study's findings, augmentation index did not change in the group as whole, however, when individual responses were examined, eleven out of the sixteen women studied were classified as "responders" who, as a group, did show a significant decrease in augmentation index. This finding is similar to our finding of eight out of the thirteen older women showing a decrease in carotid-femoral PWV (Figure 3). These findings again suggest that women's arterial stiffness responses to resistance training are highly variable.

The reports of no change in arterial stiffness following resistance exercise training also examined women of an age similar to the older women examined in the present study. Yoshizawa et al. [18] strength trained women aged 32-59 years at a moderate-intensity for twelve weeks and found no change in either carotid-femoral or femoral-tibialis posterior PWV following training. Casey et al. [14] strength trained postmenopausal women aged 52-72 years at a low-intensity and found no change in augmentation index following training. Collier et al. [19] strength trained pre-hypertensive and hypertensive women aged 40-60 at a moderate intensity for four weeks and found no change in carotid-femoral PWV. Kingsley strength trained overweight and obese women aged 35-50 for twelve weeks and found no change in augmentation index [28].

No physiological and/or methodological differences stand out as clear explanations for discrepancies in findings between studies. Based on synthesis of existing evidence, responses appear independent of age, training intensity, training duration or any other obvious factor. As it is clear that the arterial stiffness response to resistance exercise in women is highly variable, future studies should attempt to determine what physiological and/or methodological differences induce this variation.

Changes in blood flow following the resistance exercise training are also best discussed by examining mean values and individual changes. The main blood flow related findings of this study were that resting blood flow did not change in either young or older women, total hyperemia increased in both groups, and peak blood flow increased in older, but not younger subjects (Table 3 and Figures 7 and 10). If individual responses are examined, the statistical increase in peak flow appears driven by the older individuals as eleven out of thirteen older individuals and only six out of sixteen younger individuals showed an increase in peak flow (Figures 8 and 9). Thus, although peak flow and total hyperemia reflect different aspects of the microvascular reactive response (with total hyperemia reflecting both the early peak flow and the "late phase" nitric-oxide-influenced response [81]), in this case it appears that only a modest difference in peak flow and total hyperemia response existed within each group of subjects.

Very little work has examined forearm blood flow responses to resistance training in women only. Kingsley and Figueroa [28] reported an increase in both resting forearm blood flow and peak forearm blood flow following twelve weeks of resistance exercise training in women aged 35-50 years. A study in older women (aged 59-79 years) examining calf blood flow responses to twelve weeks of elastic-band-based resistance training also found an increase in blood flow in response to training [29]. Studies of blood flow changes in men following resistance exercise training generally also show an improvement in resting blood flow [30] and peak flow and total hyperemia [27] although it has been suggested that improvements may only occur after moderate-intensity and not high-intensity exercise training [95]; a decrease in resting calf blood flow has been found following a short duration (four weeks) of resistance training [31]. Another short-term (five week) resistance training study, where sex was not specified, found no improvement in resting forearm blood flow or peak blood flow following training [32]. However, Collier et al. [19] also performed a relatively short-term (four week) resistance training study comparing men's and women's forearm blood flow responses and found both groups showed improvements in blood flow following training with the women having a greater resting forearm blood flow response to training than the men and both groups showing similar improvements in peak forearm blood flow. All of the aforementioned blood flow studies used the strain-gauge plethysmography technique employed in the present study.

Studies using ultrasound assessment of femoral artery blood flow have shown that resting femoral blood flow decreases with age in men and women [33-35]. However, this reduction has been found to be absent in men who are resistance trained [36]. Interestingly, the present study found no baseline differences between young and older women in resting forearm blood flow, peak flow, or total hyperemia; this lack of a difference may be due to the age gap employed or to a difference in forearm microvascular (strain-gauge plethysmography assessed) compared to leg macrovascular (femoral ultrasound assessed) changes with aging.

*Functional Assessments*

Both upper and lower body average functional scores were found to improve following training. The lower body average functional score differed by group pooled across time as well (Table 5). Previous work has shown resistance training to increase functional performance in older adults [96-98]. Functional performance is not usually assessed in younger adults as this outcome is less important to the quality of life of this age group. Nevertheless, it can be concluded from the present study that this type of resistance exercise training was able to improve functional capacity in both young and older subjects. Although improvements in strength and muscle size are important, as discussed previously, functional improvements may be arguably even more important, particularly in the older population. Improving the ability to open a jar or climb stairs, for example, is likely to provide an important improvement in quality of life.

### *Thigh CSA Estimates*

The thigh CSA estimates in the present study do not appear accurate (Table 8). Acquiring repeated accurate thigh skinfolds and circumferences in this population with large amounts of fat mass on the thighs was difficult. Furthermore, the CSA estimates used have primarily been used on populations different from this study's population [89,99,100]. Thus, these results are not suspected to represent any true physiological changes.

# CHAPTER V: CONCLUSIONS

Muscle thickness changes occurred earlier than expected and this response did not greatly differ between young and older women. Both central and peripheral arterial stiffness responses showed variability with an approximately equal number of subjects increasing stiffness and decreasing stiffness. Resting forearm blood flow did not change following training although changes were seen in peak blood flow in the older group and in total hyperemia in both groups. In conclusion, eight weeks of high-intensity resistance training increased muscle size and strength more rapidly than expected; this type of training also improved microvascular function, particularly in older women, while having a varied effect on large artery stiffness.

## Answers to Research Questions

### *First Research Question and Hypothesis*

**During eight weeks of high-intensity resistance training, when will hypertrophy be evident, and at what sites will it first be evident, in young and older women? It is hypothesized that hypertrophy will be detected three to four weeks into high-intensity resistance training in both young and older women. It is hypothesized that this hypertrophy will first be detected in the upper body and hamstrings**.

A significant muscle thickness increase above baseline was first detectable following just one or two weeks of training, depending on the site measured. The first sites where a muscle thickness increase was evident were at the 50% Quadriceps, 50% Hamstrings,70% Hamstrings, and Deltoid sites. The hypothesis that hypertrophy would be detected three to four weeks into high-intensity resistance training in both young and older women was not supported. The hypothesis that hypertrophy would first be detected in the upper body and hamstrings was partially supported.

*Second Research Question and Hypothesis*

**Following eight weeks of high-intensity resistance training, will arterial stiffness and blood flow changes occur and will these changes differ between young and older women? It is hypothesized that high-intensity resistance training will not increase arterial stiffness but may improve blood flow in young or older women.** Neither carotid-femoral or femoral-tibialis posterior PWV, the gold standard of arterial stiffness measurement, changed significantly in either young or older subject when looking at mean values; resting blood flow did not change in either young or older subjects; total hyperemia increased in both young and older subjects; and peak flow increased in older subjects only. All arterial stiffness and blood flow measurements showed variability in subjects' responses. The hypothesis that high-intensity resistance training would not increase arterial stiffness in either young or older women is supported by mean values, but only partially supported when individual responses are examined. The hypothesis that training would improve microvascular blood flow is also partially supported.

**Clinical Significance**

Resistance training is recommended for both men and women, young and old as a method of increasing strength, improving risk factors for both cardiovascular and metabolic disease, and improving quality of life both psychologically and physiologically [1]. Although recommended for a wide range of people, the majority of research on resistance exercise has been performed on young men. This study provides useful information on the time-course of muscle hypertrophy in young and older women. Also, no study has directly compared young and older women's arterial stiffness and blood flow responses following resistance exercise training. As resistance exercise is recommended for both young and older women, as previously stated, it is important to know how this method of exercise affects the vasculature. This study provides evidence to support the idea that high-intensity resistance exercise improves forearm microvascular function while not greatly affecting large artery stiffness. Thus, based on this finding, high-intensity resistance exercise appears beneficial for the aspects of cardiovascular health measured in the present study.

**Future Research Directions**

Future research should attempt to repeat the present study while using more sensitive measures of muscle hypertrophy such as pQCT scanning and/or magnetic resonance imaging. The time-course of hypertrophy in older men could also be examined. Future research building on the cardiovascular findings of this study should examine what causes the variations in arterial stiffness and microvascular blood flow responses to resistance exercise.

**Limitations**

Several limitations exist in this study. Women were put into arbitrary age groups of 18-25 and 50-64 to represent "young" and "older" respectively. Findings may have changed were the age groups expanded or shrunken. Women were mainly Caucasian although some African American, Asian American, and Native American women participated. Further, the subjects were a self-selected group that was interested in improving their strength and/or muscular appearances. Thus, the findings may not apply to all women. Another limitation in this study was the lack of dietary control. Changes in strength and/or hypertrophy may have been affected by any dietary changes. Also, measurements were not always performed at the same time of day for each subject; thus, diurnal fluid shifts may have affected the ultrasound measurements and variations in strength, and motivation throughout the day may have affected 1RM assessments. A further limitation was that pulse wave velocity measurements were only performed centrally and on the leg; no arm pulse wave velocity measurements were performed.

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## Appendix A: Functional Questionnaires

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**ID:________________________**

## MODIFIED AMERICAN SHOULDER & ELBOW SURGEONS

## RATING SCALE

**Please rate your ability to do the following daily activities using the following scale:**

0 = unable    1 = very difficult    2=somewhat difficult    3 = not difficult

Get dressed including putting on your coat ______________________________

Wash back/do up bra ______________________________

Comb Hair ______________________________

Reach a high shelf ______________________________

Lift heavy objects ______________________________

Do usual work ______________________________

Do usual sport ______________________________

Sleep on your painful side ______________________________

Throw a ball overhand ______________________________

Open a jar of food ______________________________

Cut with a knife ______________________________

Use a phone ______________________________

Do up buttons ______________________________

Carry shopping bag ________________________

## "THE LOWER EXTREMITY FUNCTIONAL SCALE"

ID:___________________________________________ Date:__________________

We are interested in knowing whether you are having any difficulty at all with the activities listed below because of your lower limb problem for which you are currently seeking attention. Please provide an answer for each activity.

**Today, do you, or would you have any difficulty at all with:**

**Minimum Level of Detectable Change (90% Confidence): 9 points** **SCORE: ______/80**

Reprinted from Brinkley, J.Stafford, P., Lott, S., Ridle, D., & The North American Orthopedic Rehabilitation Reseasch Network, The Lower Extremity Functional Scale: Scale development, measurement properties, and clinical application, Physical Therapy, 1999, 79, 4371-383, with permission of the American Physical Therapy Association

Signature:

| | Activities | Extreme Difficulty or Unable to Perform Activity | Quite a Bit of Difficulty | Moderate Difficulty | A Little Bit of Difficulty | No Difficulty |
|---|---|---|---|---|---|---|
| 1 | Any of your usual work, housework or school activities | 0 | 1 | 2 | 3 | 4 |
| 2 | Your usual hobbies, recreational or sporting activities | 0 | 1 | 2 | 3 | 4 |
| 3 | Getting into or out of the bath | 0 | 1 | 2 | 3 | 4 |
| 4 | Walking between rooms | 0 | 1 | 2 | 3 | 4 |
| 5 | Putting on your shoes or socks | 0 | 1 | 2 | 3 | 4 |
| 6 | Squatting | 0 | 1 | 2 | 3 | 4 |
| 7 | Lifting an object, like a bag of groceries, from the floor | 0 | 1 | 2 | 3 | 4 |
| 8 | Performing light activities around your home | 0 | 1 | 2 | 3 | 4 |
| 9 | Performing heavy activities around your home | 0 | 1 | 2 | 3 | 4 |
| 10 | Getting into or out of a car | 0 | 1 | 2 | 3 | 4 |
| 11 | Walking 2 blocks | 0 | 1 | 2 | 3 | 4 |
| 12 | Walking a mile | 0 | 1 | 2 | 3 | 4 |
| 13 | Going up or down 10 stairs (about 1 flight of stairs) | 0 | 1 | 2 | 3 | 4 |
| 14 | Standing for 1 hour | 0 | 1 | 2 | 3 | 4 |
| 15 | Sitting for 1 hour | 0 | 1 | 2 | 3 | 4 |
| 16 | Running on even ground | 0 | 1 | 2 | 3 | 4 |
| 17 | Running on uneven ground | 0 | 1 | 2 | 3 | 4 |
| 18 | Making sharp turns while running fast | 0 | 1 | 2 | 3 | 4 |
| 19 | Hopping | 0 | 1 | 2 | 3 | 4 |
| 20 | Rolling over in bed | 0 | 1 | 2 | 3 | 4 |
| | **Column Totals:** | | | | | |

# Appendix B: Other Forms

***Neuromuscular Research Laboratory***
***OU Department of Health and Exercise Science***
***Health Status Questionnaire***

**Instructions** Complete each question accurately. All information provided is confidential.
(NOTE: The following codes are for office use only: RF; MC; SLA; SEP)

**Part 1. Information about the individual**

1.______________________________________
Date

2. ______________________________________________________________
Legal name Nickname

3.______________________________________________________________
Mailing address

______________________________________________________________
Home phone Business phone

4.Gender (circle one): Female Male (RF)

5. Year of birth: ______________________ Age ________

6. Number of hours worked per week: Less than 20 20-40 41-60 Over 60

( SLA) More than 25% of time spent on job (circle all that apply)

Sitting at desk Lifting or carrying loads Standing Walking Driving

**Part 2. Medical history**

7. (RF) Circle any who died of heart attack before age 50:

Father Mother Brother Sister Grandparent

8.Date of: Last medical physical exam: ____________ Last physical fitness test: ______________
Year Year

9. Circle operations you have had:

| | | | | | |
|---|---|---|---|---|---|
| Back (SLA) | Heart (MC) | Kidney (SLA) | Eyes (SLA) | Joint (SLA) | Neck (SLA) |
| Ears (SLA) | Hernia (SLA) | Lung (SLA) | Other ____________________ | | |

10. Please circle any of the following for which you have been diagnosed or treated by a physician or health professional:

| | | |
|---|---|---|
| Alcoholism (SEP) | Diabetes (SEP) | Kidney problem (MC) |
| Anemia, sickle cell (SEP) | Emphysema (SEP) | Mental illness (SEP) |
| Anemia, other (SEP) | Epilepsy (SEP) | Neck strain (SLA) |
| Asthma (SEP) | Eye problems (SLA) | Obesity (RF) |
| Back strain (SLA) | Gout (SLA) | Osteoporosis |
| Bleeding trait (SEP) | Hearing loss (SLA) | Phlebitis (MC) |
| Bronchitis, chronic (SEP) | Heart problems (SLA) | Rheumatoid arthritis (SLA) |
| Cancer (SEP) | High blood pressure (RF) | Stroke (MC) |
| Cirrhosis, liver (MC) | Hypoglycemia (SEP) | Thyroid problem (SEP) |
| Concussion (MC) | Hyperlipidemia (RF) | Ulcer (SEP) |
| Congenital defect (SEP) | Infectious mononucleosis (MC) | Other ________________ |

11. Circle all medicine taken in last 6 months:

| | | |
|---|---|---|
| Blood thinner (MC) | Epilepsy medication (SEP) | Nitroglycerin (MC) |
| Diabetic pill (SEP) | Heart-rhythm medication (MC) | Estrogen |
| Digitalis (MC) | High-blood-pressure medication (MC) | Thyroid |
| Diuretic (MC) | Insulin (MC) | Corticosteroids |
| Asthma | Other ___________________ | |

12. Any of these health symptoms that occurs frequently is the basis for medical attention. Circle the number indicating how often you have each of the following:

1 = Practically never 2 = Infrequently 3 = Sometimes 4 = Fairly often 5 = Very often

a. Cough up blood (MC)
1 2 3 4 5
b. Abdominal pain (MC)
1 2 3 4 5
c. Low back pain (SLA)
1 2 3 4 5
d. Leg pain (MC)
1 2 3 4 5
e. Arm or shoulder pain (MC)
1 2 3 4 5
f. Chest pain (RF) (MC)
1 2 3 4 5
g. Swollen joints (MC)
1 2 3 4 5
h. Feel faint (MC)
1 2 3 4 5
I. Dizziness (MC)
1 2 3 4 5
j. Breathless with slight exertion (MC)
1 2 3 4 5

13. Do any of the following apply:

- A sudden death in your biological father or brother, or mother or sister prior to age 55 or 65, respectively? Yes No
- Current smoker or have you quit smoking within the past 6 months? Yes No
- Do you take hypertensive medication or have a confirmed systolic or diastolic blood pressure $\geq$140 or 90 mmHg, respectively? Yes No
- Take lipid lowering medication or have high blood cholesterol? Yes No
- You have a confirmed fasting blood glucose of $\geq$100 mg/dL? Yes No
- Have you recently been diagnosed as clinically obese (BMI > 30)? Yes No
- Are you sedentary? Yes No
- Diagnosed Crohn's or Inflammatory Bowel Disease Yes No
- Past fracture of a hip, pelvis, or femur Yes No
- Major Surgery within the last 6 months Yes No
- Been diagnosed with varicose veins Yes No
- Family history of Deep Vein Thrombosis or Pulmonary Embolism Yes No

**Part 3. Health-related behavior**

14. (RF) Do you now smoke or chew tobacco? Yes No

15. If you are a smoker, indicate number smoked per day:

Cigarettes: 40 or more 20-39 10-19 1-9
Cigars or pipes only: 5 or more or any inhaled Less than 5, none inhaled

16. Weight now: ________lb. One year ago: ________lb.. Age 21: ________lb.

17. Thinking about the things you do at work, how would you rate yourself as to the amount of physical activity you get compared with others of your age and sex?

1. Much more active
2. Somewhat more active
3. About the same
4. Somewhat less active
5. Much less active
6. Not applicable

18. Now, thinking about the things you do outside of work, how would you rate yourself as to the amount of physical activity you get compared with others of your age and sex?

1. Much more active
2. Somewhat more active

3. About the same
4. Somewhat less active
5. Much less active
6. Not applicable

19. Do you regularly engage in aerobic (such as running, walking, biking, swimming) exercise?

1. Yes 2. No

20. If you answered "yes" to question #19, how frequently (hours per week) have you engaged in aerobic activities during the past 6 months?

____________________

21. Do you regularly engage in strength-training exercise such as lifting weights, using weight-machines or therabands?

1. Yes 2. No

22. If you answered "yes" to question #21, how frequently (times per week) have you engaged in strength-training exercise during the past 6 months?

____________________

**Bone Density Research Laboratory**
**Department of Health and Exercise Science**
**University of Oklahoma**

## MENSTRUAL HISTORY QUESTIONNAIRE FOR PRE-MENOPAUSAL WOMEN

Subject ID: ______________________________ Date: ____________

We are asking you to give us as complete a menstrual history as possible. All information you provide will be strictly confidential.

**Are you pregnant?** (circle your response below)

YES – Do not complete the rest of this form.

NO – Complete sections A and B of this form.

**SECTION A: CURRENT MENSTRUAL STATUS**

1. Approximately how many menstrual periods have you had during the past 12 months?

2. Circle the months in which your period occurred. This means from this time last year until the present month.

   JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

3. What is the usual length of your menstrual cycle (first day menses to first day next menses)
   ____ days. Today is day _____ of your present menstrual cycle.

4. What was the date of your last period?

5. When do you expect your next menstrual period?

6. What is the length (number of days) of your menstrual flow on the average?

1

How many of these days would you term "heavy"

7. Do you experience cramps during menstruation (dysmenorrhea)? If yes, how many days does this last?

8. Do you experience symptoms of premenstrual syndrome (i.e., weight gain, increased eating, depression, headaches, anxiety, breast tenderness)? If yes, list the symptoms.

9. Do you take oral contraceptives or any other medication that includes estrogen and/or progesterone? If no, skip to question 10.

If yes, how long have you been taking the birth control pill?

What is the brand name and dosage of the oral contraceptive you are taking?

Has the pill affected your menstrual cycle (regularity, length and amount of flow, length of cycle)? If yes, indicate changes.

10. Have you taken oral contraceptives in the past? If no, skip to SECTION B.

If yes, what was the brand name and dosage?

When did you start taking the pill; for how long; and when did you stop taking it?

11. If you answered yes to 9 or 10, did you experience a weight gain and/or a change in appetite as a result of oral contraceptive use? If so, please indicate amount of weight gain.

12. If you are perimenopausal, are you experiencing menopausal symptoms? Please list your symptoms (i.e., hot flushes, mood swings, headaches etc.)

**SECTION B: PAST MENSTRUAL HISTORY**

1. At what age did you experience your **first** menstrual period?

2. Were your periods regular (occurring monthly) during the first two years after menstruation began? If no, at what age did your periods eventually become regular?

3. Did you perform any form of athletic training prior to your first menstrual period? If yes, indicate type of training (i.e., gymnastics, track, basketball, etc.) and the number of years you trained for each activity.

4. Has there been any time in the past where your periods were irregular or absent? If no, skip to question 5.

   If yes, did these periods coincide with unusual bouts of training, or with a period of stress?
   How long did this occur?

5. Have you ever consulted a doctor about menstrual problems (specifically, about irregular or missing periods)? If no, skip to question 6.

   If yes, have you ever been diagnosed as having a shortened luteal phase?

   Have you ever been tested to determine if you were ovulating normally?

6. Have you ever consulted a physician about any problems relating to your hormonal system? If so, please explain.

The University of Oklahoma®
Health Sciences Center
INSTITUTIONAL REVIEW BOARD

**IRB Number: 16342**
**Meeting Date: February 20, 2012**
**Approval Date: March 01, 2012**

March 06, 2012

Michael Bemben, Ph.D.
Univ of Oklahoma, Dept of Health & Exercise Sci
1401 Asp Avenue
Norman, OK 73019

**RE: The Time-Course of Muscle Hypertrophy in Women**

Dear Dr. Bemben:

The University of Oklahoma Health Sciences Center's Institutional Review Board (IRB) reviewed the above-referenced research protocol at its regularly scheduled meeting on February 20, 2012. It is the IRB's judgement that the rights and welfare of the individuals who may be asked to participate in this study will be respected; that the proposed research, including the process of obtaining informed consent, will be conducted in a manner consistent with the requirements of 45 CFR 46 or 21 CFR 50 & 56, as amended; and that the potential benefits to participants and to others warrant the risks participants may choose to incur.

This letter documents approval to conduct the research as described:

IRB Application Dated: February 02, 2012
Protocol Dated: September 01, 2009
Other Dated: February 02, 2012 Health Status Questionnaire
Other Dated: February 02, 2012 Subject Medical Clearance Form
Other Dated: February 02, 2012 Menstrual History Questionnaire - Post-Menopausal
Other Dated: February 02, 2012 Menstrual History Questionnaire - Pre-Menopausal
Other Dated: February 02, 2012 Pre-Screening Subject Recruitment Form
Other Dated: February 02, 2012 Modified ASES rating scale
Other Dated: February 02, 2012 Lower Extremity Functional Scale
Phone Script - Recruitment Dated: February 02, 2012
Recruitment flyer Dated: February 02, 2012
Advertisement - Email Dated: February 02, 2012
Consent form - Subject Dated: September 08, 2010
Priv - Research Auth 1 Dated: January 04, 2012

As principal investigator of this protocol, it is your responsibility to make sure that this study is conducted as approved by the IRB. Any modifications to the protocol or consent form, initiated by you or by the sponsor, will require prior approval, which you may request by completing a protocol modification form.

It is a condition of this approval that you report promptly to the IRB any serious, unanticipated adverse events experienced by participants in the course of this research, whether or not they are directly related to the study protocol. These adverse events include, but may not be limited to, any experience that is fatal or immediately life-threatening, is permanently disabling, requires (or prolongs) inpatient hospitalization, or is a congenital anomaly, cancer or overdose. For multi-site protocols, the IRB must be informed of serious adverse events at all sites.

The approval granted expires on January 31, 2013. Should you wish to maintain this protocol in an active status beyond that date, you will need to provide the IRB with an IRB Application for Continuing Review (Progress Report) summarizing study results to date. The IRB will request a progress report from you approximately three months before the anniversary date of your current approval.

If you have questions about these procedures, or need any additional assistance from the IRB, please call the IRB office at (405) 271-2045 or send an email to irb@ouhsc.edu. Finally, please review your professional liability insurance to make sure your coverage includes the activities in this study.

Sincerely yours,

Karen J. Beckman, M.D.
Chair, Institutional Review Board

Post Office Box 26901 • 1000 S.L. Young Blvd., Room 176
Oklahoma City, Oklahoma 73126-0901 • (405) 271-2045 • FAX: (405) 271-1677

*Version 09/08/10* *IRB No: 16342*

**Consent Form**
**University of Oklahoma Health Sciences Center (OUHSC)**
**The Time-Course of Muscle Hypertrophy in Women**
**Principle Investigator: Dr. Michael Bemben, University of Oklahoma, 405-325-2717**

This is a research study. Research studies involve only individuals who choose to participate. Please take your time to make your decision. Discuss this with your family and friends.

**Why Have I Been Asked To Participate In This Study?**
You are being asked to take part in this trial/study because you meet the inclusion criteria of a female between the ages of 18-25 or 50-64 years who has not performed resistance exercise more than twice per week for the last 6 months and is not taking hormone replacement therapy.

**Why Is This Study Being Done?**
The purpose of this study is 1) to measure the rate of muscle growth caused by whole-body resistance exercise training in young and older women and 2) to examine artery responses to this type of training in young and older women.

**How Many People Will Take Part In The Study?**
About 30 people will take part in this study. All of these individuals will participate at this location.

**What Is Involved In The Study?**
If you take part in this study, you will have the following tests and procedures:
This study involves eight weeks of strength exercise training. If you are aged 50-64, you will need to obtain medical clearance from your physician in order to participate in the study. You will be asked to provide a urine sample for a pregnancy test before having a DEXA scan. Prior to any training or measurements, a familiarization visit will occur. During this visit, you will fill out several forms and your resting blood pressure will be assessed. If you are able to have children, you will have a pregnancy test. You will also be familiarized with the strength training equipment. You will be asked to lift progressively heavier weights on the weight machines in order to familiarize you with the 1RM testing procedures and the machines that will be using for the future exercise training.

Following the familiarization visit, a pre-testing visit will occur in which the following measurements will be performed: pregnancy test, total body DEXA scan, 8-site ultrasound, thigh circumference, thigh skin-folds, weight, height, pulse wave velocity, blood pressure, forearm blood flow, forearm reactive hyperemia, 1RMs, and two functionality questionnaires.

Approximately two to three weeks after this visit, you will visit the lab again for another pre-testing visit where these same measurements will be performed.

These same measurements will again be performed following eight weeks of resistance exercise training.

In addition to these pre and post measurements, weekly weight taking, thigh circumference, skinfolds and ultrasounds at eight locations on your body will be performed. These weekly measurements will be performed immediately prior to your first training session of the week.

Every other week, your maximal strength on the weight machines on which you are training will be assessed. This assessment is incorporated into your training program. All procedures mentioned above are described below in more detail.

**Exercise Training**

Eight weeks of progressive strength exercise training will be performed. You will perform training three times per week using six exercise machines: leg extension, leg curl, leg press, lat pull-down, shoulder press, and chest press. Each exercise will be performed for three total sets. Initially, you will lift at 80% of the heaviest amount of weight you can lift. Eight to ten repetitions will be performed for the first two sets. The third set will be performed until you can no longer complete one more repetition with good form. When your repetitions in the last set exceed 10, weight on that exercise will be increased. This progression will continue throughout the eight weeks of training and is intended to maximize any beneficial muscular changes that may occur from training. (~30-45 minutes)

**DXA**

A DXA scan of your whole body will be performed. This test is non-invasive and only requires that you lie still for the test to be completed. This research study involves exposure to radiation from a total of three DXA scans, which is a type of x-ray procedure. (~10-15 minutes)

**8-Site Ultrasound**

We will measure your muscle and fat thickness with an ultrasound machine. This procedure is similar to what is done to look at a baby in a women's uterus. A small amount of gel will be placed on a probe and this probe will be positioned on eight different sites on the body. When an appropriate image is obtained, we will print this image from the ultrasound machine and, later, we will be able to analyze this image to determine fat and muscle thickness. The eight sites that will be assessed are mid-quadriceps, lower-quadriceps, mid-hamstrings, lower-hamstrings, deltoid (shoulder), upper chest, subscapular (back), and visceral (belly - at this site only fat is assessed) (~10-15 minutes).

**Thigh Skin-folds and Circumference**

Four skin-folds will be taken on your mid-thigh; basically, using our fingers, we will gently pull the fat and skin away from the muscle and measure this thickness. We will measure the circumference of the middle of your thigh with a measuring tape. (5 minutes).

**Weight and Height**

We will measure your body weight and height using a wall stadiometer and a digital scale. (~2 minutes)

**Pulse Wave Velocity**

We will measure the health of your arteries using a small, pen-shaped device that is connected to a machine called a SphymoCor. We will find the pulse at the neck, thigh, and ankle. We will use a measuring tape to measure the distances between these pulses. We will place three sticky electrodes on your chest and will connect wires that are attached to the SphymoCor to these electrodes. We will then place the pen-shaped device over the various pulses to measure "pulse waves". Placing the device over these pulses provides the machine with information about the time it takes the pulse to travel through the blood vessels. These times, combined with the measured distances, allows the machine to calculate the speed with which the "pulse wave" travels through the arteries. This speed provides us with useful information about arterial health. (~15-20 minutes)

**Blood Pressure**

We will measure your blood pressure in the arm the same way that it is typically measured at a doctor's office. A cuff will be placed around the upper arm; it will inflate quickly, and then deflate slowly. This will be taken following completion of health history and menstrual cycle questionnaires (see below) but prior to any exercise or other physical measurements. (3-5 minutes)

**Forearm Blood Flow**

We will measure the amount of blood flow in the smaller blood vessels of your forearm. We will prop up your wrist on a foam pad. We will measure the circumference of your forearm at its largest point. We will place two blood pressure cuffs over the arm: one around wrist and one just above the elbow. We will place a mercury-filled strain gauge (similar in appearance and stretchiness to a rubber band) around the forearm. We will inflate the cuff at your wrist for one minute. We will then inflate and deflate the cuff just above the elbow to a low pressure six times. Each inflation will last ~7s and each deflation will last approximately ~8s. The cuff around the wrist stays inflated during this low pressure inflation and deflation of the cuff just above the elbow. This inflation and deflation takes a total time of ~90s leading to a total wrist cuff inflation time of ~2.5 minutes. The amount the strain gauge stretches is sensed by our machine and tells us the extent of the forearm blood flow. During this procedure, both cuffs will be inflated at the same time for a total of 42s (7 seconds x 6 inflations); regular deflations of the cuff above the elbow occur during this time and the pressure of this cuff is very low even when inflated. (~10 minutes)

**Forearm Reactive Hyperemia**

This procedure uses the same equipment and set-up as the forearm blood flow procedure. This procedure looks at the responsiveness of the smaller blood vessels of the forearm rather than just the resting abilities. For this procedure, the blood pressure cuff above the elbow is inflated to a pressure of 250mmHg, which is a substantial pressure, for 5 minutes. After 4 out of the 5 minutes, the cuff around the wrist is also inflated. At 5 minutes, the cuff above the elbow is rapidly deflated. Next the cuff above the elbow is inflated to a low pressure for 6s followed by a 7s deflation and this inflation/deflation process is repeated thirteen times; this inflation/deflation procedure is identical to that performed to measure resting blood flow except that it is performed thirteen times. This procedure is uncomfortable and may be painful. (~15-20 minutes)

**Strength Assessments (1 Repetition Maximums aka "1RMs")**

1RM's will be performed according to the American College of Sports Medicine's Guidelines for Exercise Testing and Prescription. You will perform a light warm-up of 5-10 repetitions at 40-60% of perceived maximum ability. Following a 1-minute rest, you will do 3-5 repetitions at 60-80% of the perceived maximum ability. A small amount of weight will be added and a 1-RM lift will be attempted. If the lift is successful, a rest period of ~3-5 minutes will be provided. The goal is to find the 1-RM within 3-5 maximal efforts. The 1RM is reported as the weight of the last successfully completed lift. At both pre-testing and the post measurements, 1RMs for the six exercises will be performed on the same day. During the bi-weekly 1RMs, three lower body exercise 1RMs will be performed one day in place of the standard leg training that day and the next training day three upper body 1RMs will be performed in place of the standard arm training. (~10 minutes per exercise).

**Two Functionality Questionnaires**

"The lower extremity functional scale" and the "modified American shoulder and elbow surgeons rating scale" which are two short, one-page questionnaires of functional ability will be given to you to fill out while at the lab. (~5-10 minutes).

**Other Forms**

During the familiarization visit, you will fill out a Health History Questionnaire and a Menstrual Cycle History Questionnaire. (~15 minutes).

**How Long Will I Be In The Study?**
You will be in this study for up to twelve weeks. This study involves four "testing" visits to the laboratory and twenty-four (three times per week for eight weeks) strength training visits. The familiarization visit will take approximately 1 hour. The two pre-testing and one post-testing visits will take approximately 2.5 hours each. The strength training visits will take approximately 30-45 minutes each. The first strength training visit of each week, in which some measurements are taken immediately prior to training, will take approximately 45-60 minutes.

There may be anticipated circumstances under which your participation may be terminated by the investigator without regard to your consent.

- He/She feels that it is in your medical best interest.
- You fail to follow study requirements.

You can stop participating in this study at any time. However, if you decide to stop participating in the study, we encourage you to talk to the researcher first.

**What Are The Risks of The Study?**
This research study involves exposure to radiation from three DEXA scans, which is a type of x-ray procedure. This radiation is not necessary for medical care and is for research purposes only. You will receive radiation exposure of less than 2 mrem from each scan and a total dose of 6 mrem, which is less than the radiation received in 6 days from natural background radiation (~ 300 mrem/yr), such as naturally occurring radioactivity in soil. Any risk from this amount of radiation is too small to measure directly, and is small when compared to every day risks. Although the amount of radiation the subject will receive in this study is minimal, it is important for you to be aware that the risk from radiation exposure is cumulative over the life time.

**Pregnant women should not be exposed to radiation. Radiation safety levels for fetuses have not been established and therefore no additional exposure whatsoever can be considered safe.**

**I verify that I have read and understood the above radiation warning.**
**INITIALS: _______**

There is always a risk of injury with any exercise program. All attempts will be made to minimize your risk of injury while still allowing you to experience gains from the exercise program. Temporary muscle soreness will likely occur following strength testing and training, particularly at the beginning of the eight weeks. This soreness should be reduced within 24-48 hours following training or strength testing.

Reproductive Risks For Women:

Risks for females:
If you are a female, you must not be and should not become pregnant while on this study. In order to reduce your risk of pregnancy, you or your partner should use one or more of the acceptable methods of birth control listed below, regularly and consistently while you are in this study.

Acceptable methods of birth control (continuing throughout the study) include:

- An approved oral contraceptive (birth control pill)
- Intra-uterine device (IUD)
- Hormone implants
- Contraceptive injection (Depo-Provera)

- Barrier methods (diaphragm with spermicidal gel or condoms)
- Transdermal contraceptives (birth control patch)
- Vaginal contraception ring (birth control ring)
- Sterilization (tubal ligation, hysterectomy or vasectomy)

If you become pregnant or suspect that you are pregnant, during this study, you should immediately inform the study personnel. If you become pregnant or suspect that you are pregnant while on this study, a pregnancy test will be done. No DXA procedures will be performed until the result of the pregnancy test is known. If pregnancy is confirmed, you will be withdrawn from the study. Payment for all aspects of obstetrical, child, or related care will be your responsibility.

**Are There Benefits to Taking Part in The Study?**

If you agree to take part in this study, there may or may not be direct benefit to you. Strength training has been shown to be an effective method to improve muscle strength and muscle size. Although we cannot promise improvements, previous research suggests these improvements may occur. We also hope that the information learned from this study will benefit others in the future.

**What About Confidentiality?**

Efforts will be made to keep your personal information confidential. You will not be identifiable by name or description in any reports or publications about this study. We cannot guarantee absolute confidentiality. Your personal information may be disclosed if required by law. You will be asked to sign a separate authorization form for use or sharing of your protected health information.

There are organizations that may inspect and/or copy your research records for quality assurance and data analysis. These organizations include the US Food & Drug Administration and the OUHSC Institutional Review Board.

**What Are the Costs?**
There is no cost to you for participating in this study.

**Will I Be Paid For Participating in This Study?**
No.

**What if I am Injured or Become Ill While Participating in this Study?**
In the case of injury or illness resulting from this study, emergency medical treatment will be available. If injury occurs as a result of participation, you should consult with your personal physician to obtain treatment. However, you or your insurance company will be responsible for the costs associated with this treatment. No funds have been set aside by The University of Oklahoma Health Sciences Center or the Department of Health & Exercise Science to compensate you or pay for the costs associated with treatment in the event of injury.



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**What Are My Rights As a Participant?**

Taking part in this study is voluntary. You may choose not to participate. Refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled. If you agree to participate and then decide against it, you can withdraw for any reason and leave the study at any time. Please be sure to discuss leaving the study with the principal investigator. You may discontinue your participation at any time without penalty or loss of benefits, to which you are otherwise entitled.

You have the right to access the medical information that has been collected about you as a part of this research study. However, you may not have access to this medical information until the entire research study has completely finished and you consent to this temporary restriction. Unfortunately, radiation safety rules will not allow us to disclose to you any results obtained from DXA scans.

**Whom Do I Call If I have Questions or Problems?**

If you have questions, concerns, or complaints about the study or have a research-related injury, contact the Principle Investigator, Dr. Michael Bemben at mgbemben@ou.edu (405-325-2717) or co-investigator, Lindy Rossow at lindy.rossow@ou.edu (217-766-2273).

If you cannot reach the Investigator or wish to speak to someone other than the investigator, contact the OUHSC Director, Office of Human Research Participant Protection at 405-271-2045.

For questions about your rights as a research participant, contact the OUHSC Director, Office of Human Research Participant Protection at 405-271-2045.

**Signature:**

By signing this form, you are agreeing to participate in this research study under the conditions described. You have not given up any of your legal rights or released any individual or entity from liability for negligence. You have been given an opportunity to ask questions. You will be given a copy of this consent document.

I agree to participate in this study:

| | | |
|---|---|---|
| PARTICIPANT SIGNATURE (age ≥18) | Printed Name | Date |
| SIGNATURE OF PERSON OBTAINING CONSENT | Printed Name | Date |

**IRB No.: 16342**

**AUTHORIZATION TO USE or DISCLOSE**
**PROTECTED HEALTH INFORMATION FOR RESEARCH**

*An Informed Consent Document for Research Participation may also be required.*
*Form 2 must be used for research involving psychotherapy notes.*

Title of Research Project: **The Time-Course of Muscle Hypertrophy in Women**

Leader of Research Team: **Michael G. Bemben**

Address: **115 HHC, 1401 Asp Avenue, Norman OK**

Phone Number: **325-2717**

If you decide to join this research project, University of Oklahoma Health Sciences Center (OUHSC) researchers may use or share (disclose) information about you that is considered to be protected health information for their research. Protected health information is information about past, present, and future medical treatment or condition that is identifiable to you. It will be called PHI in this Authorization.

**PHI To Be Used or Shared**. Federal law requires that researchers get your permission (authorization) to use or share your PHI. If you give permission, the researchers may use or share with the people identified in this Authorization any PHI related to this research from your medical records and from any test results. Information used or shared may include all information relating to any tests, procedures, surveys, or interviews as outlined in the consent form; medical records and charts; name, address, telephone number, date of birth, race, and government-issued identification numbers.

**Purposes for Using or Sharing PHI**. If you give permission, the researchers may use your PHI to 1) to measure the rate of muscle growth caused by whole-body resistance exercise training in young and older women and 2) to examine artery responses to this type of training in young and older women.

**Other Use and Sharing of PHI**. If you give permission, the researchers may also use your PHI to develop new procedures or commercial products. They may share your PHI with other researchers, the research sponsor, and its agents, the OUHSC Institutional Review Board, auditors and inspectors who check the research, and government agencies such as the Food and Drug Administration (FDA) and the Department of Health and Human Services (HHS). The researchers may also share your PHI with all researchers collaborating on this project.

**Confidentiality**. Although the researchers may report their findings in scientific journals or meetings, they will not identify you in their reports. The researchers will try to keep your information confidential, but confidentiality is not guaranteed. The law does not require everyone receiving the information based on this authorization to keep it confidential, so they could release it to others, and federal law may no longer protect it.

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**YOU UNDERSTAND THAT YOUR PROTECTED HEALTH INFORMATION MAY INCLUDE INFORMATION REGARDING A COMMUNICABLE OR NONCOMMUNICABLE DISEASE.**

**Voluntary Choice**. The choice to give OUHSC researchers permission to use or share your PHI for their research is voluntary. It is completely up to you. No one can force you to give permission. However, you must give permission for OUHSC researchers to use or share your PHI if you want to participate in the research and, if you cancel your authorization, you can no longer participate in this study.

Refusing to give permission will not affect your ability to get routine treatment or health care from OUHSC.

**Cancelling Permission**. If you give the OUHSC researchers permission to use or share your PHI, you have a right to cancel your permission whenever you want. However, cancelling your permission will not apply to information that the researchers have already used, relied on, or shared.

**End of Permission.** Unless you cancel it, permission for OUHSC researchers to use or share your PHI for their research will end when all data from the project has been analyzed and all reports have been published. You may cancel your permission at any time by writing to:

| | | |
|---|---|---|
| Privacy Official<br>University of Oklahoma Health Sciences Center<br>PO Box 26901<br>Oklahoma City, OK 73190 | or | Privacy Board<br>University of Oklahoma Health Sciences Center<br>PO Box 26901<br>Oklahoma City, OK 73190 |

If you have questions, call: (405) 271-2511 or (405 271-2045.

**Access to Information.** You have the right to access the medical information that has been collected about you as a part of this research study. However, you may not have access to this medical information until the entire research study is completely finished. You consent to this temporary restriction.

**Giving Permission**. By signing this form, you give OUHSC and OUHSC's researchers led by Michael Bemben, permission to share your PHI for the research project called The Time-Course of Muscle Hypertrophy in Women.

**Patient/Participant Name:** ________________________

_________________________________ ______________

Signature of Patient-Participant or Parent if Participant is a minor — Date

*Or*

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**Page 2 of 3**

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Signature of Legal Representative** Date

**If signed by a Legal Representative of the Patient-Participant, provide a description of the relationship to the Patient-Participant and the Authority to Act as Legal Representative:

OUHSC may ask you to produce evidence of your relationship.

***A signed copy of this form must be given to the Patient-Participant or the Legal Representative at the time this signed form is provided to the researcher or his representative.***

**IRB No.: 16342**

Bone Density Research Laboratory
Department of Health and Exercise Science University of Oklahoma

## MENSTRUAL HISTORY QUESTIONNAIRE FOR POST-MENOPAUSAL WOMEN

ID: ______________________________ Date: ________________________

We are asking you to give us as complete a menstrual history as possible. All information you provide will be strictly confidential.

### SECTION A. CURRENT MENSTRUAL STATUS

1. At what age did you experience your final menstrual period?

2. Have you had a hysterectomy (surgical removal of the uterus)? If yes, at what age did you have this surgery?

3. Have you had your ovaries removed? If yes, at what age did you have this surgery?

4. Are you currently on estrogen and/or progesterone replacement therapy? If no, skip to question 5.

   If yes, how long have you been on hormone replacement therapy?

   What is the brand name, dosage, and type (i.e., pills, cream, patch) of hormone medication you are taking?

5. Have you taken estrogen and/or progesterone replacement in the past? If no, skip to SECTION B.

   If yes, what was the type (i.e, pills, cream, patch) and dosage of the medication?

   At what age did you start taking hormone replacement?

   How long did you continue taking the hormone replacement?

   At what age and why did you stop taking hormone replacement?

6. If you answered yes to questions 4 or 5, did you experience any side effects (i.e., weight gain, mood swings, headaches) while taking hormone replacement?

1

If yes, please list the side effects.

## SECTION B: PAST MENSTRUAL HISTORY

1. At what age did you experience your first menstrual period?

2. Were your periods regular (occurring monthly) during the first two years after menstruation began? If no, at what age did your periods eventually become regular?

3. Did you perform any form of athletic training prior to your first menstrual period? If yes, indicate type of training (i.e., gymnastics, track, basketball, etc.) and the number of years you trained for each activity.

4. Has there been any time in the past where your periods were irregular or absent? If no, skip to question 5.

   If yes, did these periods coincide with unusual bouts of training, or with a period of stress?
   How long did this occur?

5. Have you ever consulted a doctor about menstrual problems (specifically, about irregular or missing periods)? If no, skip to question 7.

   If yes, what was the diagnosis (i.e., shortened luteal phase, amenorrhea)?

   Have you ever been tested to determine if you were ovulating normally?

6. Have you ever consulted a physician about any problems relating to your hormonal system? If so, please explain.

# Subject Medical Clearance Form

University of Oklahoma Neuromuscular Laboratory

To the Attending Physician of: ____________________________________________

The above-named individual has indicated that she wishes to participate in a research study investigating the time-course of muscle hypertrophy and muscle strength and arterial stiffness responses to high-intensity resistance exercise in women aged 18-25 and 50-64. Prior to participation, subjects in the 50-64 years age group are required to obtain medical clearance from their personal physician(s).

This study requires testing sessions that involves three (total) whole body DXA scans, ultrasound muscle and fat thickness assessments, blood pressure assessment, forearm blood flow and reactive hyperemia assessment as measured by strain-gauge plethysmography (non-invasive), pulse wave velocity assessment as measured by applanation tonometry (non-invasive), strength assessment using standard American College of Sports Medicine one-repetition maximum procedures, and health history, menstrual cycle history, and functional performance questionnaires.

Participants in this study will strength train three times per week (~30-45 minutes per session) for eight weeks. The strength training will be performed on standard exercise machines. The following exercises will be performed: chest press, lat pull-down, shoulder press, leg press, leg extension, and leg curl.

Specific inclusion and exclusion criteria apply to the subjects recruited for this study. Below are the exclusion criteria. Please check any boxes that apply to the above-named individual.

☐ Uncontrolled hypertension
☐ Weight over 300lbs
☐ Orthopedic disability or injury that would prevent her from performing weight-machine resistance exercises
☐ Metabolic disorder that would prevent her from participation in the program

☐ Other: ____________

☐ I recommend that the above-named individual be allowed to participate in the study.
☐ **I do not** recommend that the above-named individual be allowed to participate in the study.

MEDICATIONS/NOTES: ____________________________________________

____________________________________________________________

Physician Name: ______________________ Contact Number: ______________
*(please print)*

Physician Signature: ______________________ Date: ______________________

This study has been approved by the University of Oklahoma Institutional Review Board. *For questions, please contact Michael G. Bemben, Ph.D. at mgbemben@ou.edu.*

# Pre-Screening Subjects Recruitment Form

University of Oklahoma Neuromuscular Laboratory

*"The Time-Course of Muscle Hypertrophy in Women"*

NAME: ______________________________ PHONE NUMBER: ______________________

**Inclusion Criteria**- The inclusion criteria for this study requires that each subject:

☐ is a female aged 18-25 OR aged 50-64 (postmenopausal and not on HRT)

☐ is not resistance trained (defined as >6 months without performing regular - 2x per week or greater- resistance exercise)

☐ is not highly endurance trained (may perform regular low to moderate-intensity endurance exercise <5 hours per week)

☐ has no known orthopedic disorders which would prevent participation in the exercise program

☐ is under the DXA weight limit (300lbs)

☐ is not hypertensive (SBP >140 and/or DBP >90) – this can be either naturally or under control with medication

**Exclusion Criteria**-The exclusion criteria for this study require that each subject:

☐ Is outside the age range

☐ Is premenopausal in the 50-64 age range or on HRT

☐ Is resistance trained (defined as >6 months without performing regular - 2x per week or greater- resistance exercise)

☐ Is highly endurance trained (may perform regular low to moderate-intensity endurance exercise <5 hours per week)

☐ Has known orthopedic disorders which would prevent participation in the exercise program

☐ Is over the DXA weight limit (300lbs)

☐ Is hypertensive (SBP >140 and/or DBP >90) – this can be either naturally or under control with medication

☐ Is pregnant or planning to become pregnant

# Appendix C: Data

**Blood Flow**

| | ID | Code1y... | V3 | Resting_PRE1 | Resting_PRE2 | Resting_POST | PEAKrh_PRE1 | PEAKrh_PRE2 | PEAKrh_POST | FilterforPostHoc | AUCrh_PRE1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | LD01 | 1 | . | 3 | 1 | 4 | 21 | 22 | 22 | 4.00 | 73 |
| 2 | LD02 | 1 | . | 1 | 1 | 2 | 19 | 19 | 18 | 4.00 | 43 |
| 3 | LD03 | 1 | . | 2 | 2 | . | 24 | 24 | . | . | 56 |
| 4 | LD04 | 1 | . | 3 | 3 | 3 | 24 | 24 | 27 | 4.00 | 70 |
| 5 | LD05 | 1 | . | 2 | 1 | 2 | 23 | 13 | 12 | 4.00 | 77 |
| 6 | LD06 | 1 | . | 2 | 2 | 3 | 11 | 11 | 18 | 4.00 | 51 |
| 7 | LD07 | 1 | . | 2 | 2 | . | 20 | 20 | . | . | 61 |
| 8 | LD08 | 1 | . | 2 | 2 | 8 | 31 | 30 | 25 | 4.00 | 78 |
| 9 | LD30 | 1 | . | 2 | 4 | 3 | 17 | 20 | 25 | 4.00 | 62 |
| 10 | LD10 | 1 | . | 4 | 4 | 4 | 15 | 16 | 14 | 4.00 | 115 |
| 11 | LD11 | 1 | . | 2 | 2 | 3 | 19 | 22 | 18 | 4.00 | 60 |
| 12 | LD12 | 1 | . | 1 | 2 | 3 | 30 | 26 | 25 | 4.00 | 60 |
| 13 | LD13 | 1 | . | 5 | 2 | . | 27 | 24 | . | . | 88 |
| 14 | LD14 | 2 | . | 2 | 2 | . | 10 | 10 | . | . | 36 |
| 15 | LD16 | 2 | . | 3 | 3 | 3 | 14 | 11 | 18 | 4.00 | 83 |
| 16 | LD17 | 2 | . | 3 | 3 | . | . | . | . | . | . |
| 17 | LD18 | 2 | . | 3 | 4 | . | 19 | 21 | . | . | 93 |
| 18 | LD19 | 2 | . | 5 | 6 | 4 | 16 | 17 | 24 | 4.00 | 98 |
| 19 | LD20 | 2 | . | 2 | 3 | 3 | 20 | 19 | 14 | 4.00 | 67 |
| 20 | LD21 | 2 | . | 11 | 4 | 3 | 38 | 23 | 40 | 4.00 | 154 |
| 21 | LD22 | 2 | . | 2 | 2 | . | 19 | 16 | . | . | 66 |
| 22 | LD23 | 2 | . | 3 | 3 | 5 | 19 | 19 | 23 | 4.00 | 94 |
| 23 | LD24 | 2 | . | 2 | 4 | . | 11 | 20 | . | . | 38 |
| 24 | LD25 | 2 | . | 2 | 4 | 4 | 25 | 28 | 39 | 4.00 | 58 |
| 25 | LD26 | 2 | . | 1 | 1 | 1 | 18 | 18 | 24 | 4.00 | 57 |
| 26 | LD31... | 2 | . | 3 | 2 | 3 | 16 | 17 | 30 | 4.00 | 88 |
| 27 | | . | . | . | . | . | . | . | . | . | . |
| 28 | | . | . | . | . | . | . | . | . | . | . |
| 29 | LD40 | 2 | . | 2 | 4 | . | 14 | 29 | . | . | 80 |
| 30 | LD41 | 2 | . | 2 | 2 | 3 | 19 | 19 | 19 | 4.00 | 50 |
| 31 | LD42 | 2 | . | 1 | 1 | 4 | 17 | 10 | 19 | 4.00 | 48 |
| 32 | LD43 | 1 | . | 2 | 2 | 4 | 18 | 17 | 24 | 4.00 | 54 |
| 33 | LD44 | 1 | . | 2 | 4 | 3 | 21 | 30 | 21 | 4.00 | 94 |
| 34 | LD45 | 1 | . | 3 | 3 | 3 | 18 | 32 | 23 | 4.00 | 94 |

| | AUCrh_PRE2 | AUCrh_POST | RestingPreAverage | PeakRHPreAverage | AUCrhPreAverage |
|---|---|---|---|---|---|
| 1 | 56 | 88 | 2.28 | 21.43 | 64.11 |
| 2 | 43 | 51 | 1.18 | 19.38 | 42.51 |
| 3 | 56 | . | 1.75 | 24.23 | 55.62 |
| 4 | 70 | 77 | 2.71 | 24.47 | 69.54 |
| 5 | 43 | 36 | 1.52 | 18.18 | 60.25 |
| 6 | 51 | 72 | 1.67 | 11.07 | 50.88 |
| 7 | 61 | . | 1.84 | 20.30 | 60.54 |
| 8 | 63 | 107 | 2.11 | 30.30 | 70.39 |
| 9 | 92 | 99 | 3.06 | 18.77 | 76.78 |
| 10 | 68 | 65 | 3.85 | 15.38 | 91.53 |
| 11 | 65 | 73 | 1.99 | 20.77 | 62.43 |
| 12 | 86 | 144 | 1.85 | 28.11 | 72.81 |
| 13 | 84 | . | 3.56 | 25.70 | 85.89 |
| 14 | 36 | . | 2.04 | 10.05 | 36.14 |
| 15 | 56 | 97 | 2.95 | 12.74 | 69.16 |
| 16 | . | . | 2.64 | . | . |
| 17 | 119 | . | 3.91 | 19.76 | 106.17 |
| 18 | 93 | 112 | 5.59 | 16.56 | 95.34 |
| 19 | 66 | 75 | 2.06 | 19.38 | 66.41 |
| 20 | 180 | 230 | 7.64 | 30.24 | 166.72 |
| 21 | 57 | . | 2.17 | 17.77 | 61.38 |
| 22 | 94 | 112 | 3.33 | 19.38 | 93.98 |
| 23 | 92 | . | 2.86 | 15.07 | 64.87 |
| 24 | 96 | 124 | 3.06 | 26.56 | 77.03 |
| 25 | 57 | 35 | 1.45 | 18.45 | 56.99 |
| 26 | 54 | 106 | 2.51 | 16.66 | 71.14 |
| 27 | . | . | . | . | . |
| 28 | . | . | . | . | . |
| 29 | 121 | . | 3.29 | 21.65 | 100.41 |
| 30 | 50 | 88 | 1.62 | 18.65 | 50.33 |
| 31 | 33 | 48 | 1.27 | 13.53 | 40.64 |
| 32 | 86 | 78 | 1.79 | 17.61 | 70.05 |
| 33 | 126 | 99 | 3.33 | 25.43 | 110.12 |
| 34 | 95 | 98 | 3.32 | 24.70 | 94.34 |

## Other Cardiovascular Variables

Cardiovascular.sav

| | ID | Code1young | SBPPre1 | DBPPre1 | HeartRate | cPWVPre1 | legPWVPre1 | V8 | SBPPre2 | DBPPre2 | HeartRate_A |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | LD01 | 1 | 97 | 66 | 66 | 7 | 9 | . | 100 | 64 | 78 |
| 2 | LD02 | 1 | 107 | 69 | 64 | 6 | 8 | . | 107 | 69 | 64 |
| 3 | LD03 | 1 | 116 | 73 | 66 | 6 | 7 | . | . | . | . |
| 4 | LD04 | 1 | 119 | 66 | 51 | 5 | 9 | . | 119 | 66 | 51 |
| 5 | LD05 | 1 | 98 | 66 | 64 | 8 | 5 | . | 98 | 61 | 67 |
| 6 | LD06 | 1 | 101 | 67 | 66 | 6 | 5 | . | 108 | 63 | 71 |
| 7 | LD07 | 1 | 107 | 62 | 68 | 4 | 9 | . | . | . | . |
| 8 | LD08 | 1 | 102 | 64 | 68 | 5 | 8 | . | 112 | 69 | 56 |
| 9 | LD30 | 1 | 109 | 69 | 71 | 5 | 10 | . | 105 | 73 | 74 |
| 10 | LD10 | 1 | 121 | 82 | 82 | 7 | 10 | . | 123 | 82 | 83 |
| 11 | LD11 | 1 | 100 | 67 | 64 | 6 | 9 | . | 128 | 75 | 73 |
| 12 | LD12 | 1 | 98 | 64 | 58 | 7 | 9 | . | 100 | 61 | 62 |
| 13 | | . | . | . | . | . | . | . | . | . | . |
| 14 | LD13 | 1 | 104 | 64 | 68 | 6 | 7 | . | 104 | 63 | 65 |
| 15 | LD14 | 2 | 119 | 78 | 59 | 8 | 11 | . | . | . | . |
| 16 | LD15 | 2 | 143 | 81 | 58 | 8 | 9 | . | 141 | 76 | 54 |
| 17 | LD16 | 2 | 104 | 72 | 88 | 8 | 7 | . | 113 | 78 | 89 |
| 18 | LD17 | 2 | 117 | 78 | 64 | 7 | 10 | . | . | . | . |
| 19 | LD18 | 2 | 124 | 72 | 75 | 13 | 17 | . | 118 | 64 | 79 |
| 20 | LD19 | 2 | 141 | 79 | 67 | 9 | 7 | . | 132 | 73 | 66 |
| 21 | LD20 | 2 | 121 | 81 | 69 | . | 11 | . | 120 | 78 | 63 |
| 22 | LD21 | 2 | 117 | 73 | 52 | 8 | 8 | . | 121 | 75 | 53 |
| 23 | LD22 | 2 | 116 | 69 | 62 | 8 | 11 | . | 115 | 65 | 65 |
| 24 | LD23 | 2 | 116 | 77 | 53 | 7 | 8 | . | 110 | 74 | 52 |
| 25 | LD24 | 2 | 120 | 79 | 72 | 8 | 11 | . | 127 | 81 | 71 |
| 26 | LD25 | 2 | 113 | 68 | 63 | 8 | 9 | . | 101 | 64 | 74 |
| 27 | LD26 | 2 | 110 | 76 | 56 | 8 | 12 | . | 110 | 76 | 56 |
| 28 | | . | . | . | . | . | . | . | . | . | . |
| 29 | | . | . | . | . | . | . | . | . | . | . |
| 30 | LD36 | 2 | 136 | 87 | 67 | 9 | 10 | . | 122 | 79 | 74 |
| 31 | LD38 | 2 | 90 | 58 | 56 | 6 | 8 | . | 106 | 71 | 53 |
| 32 | LD39 | 2 | 123 | 82 | 80 | 8 | 8 | . | 114 | 77 | 67 |
| 33 | LD40 | 2 | 148 | 86 | 72 | 10 | 9 | . | 121 | 77 | 80 |
| 34 | LD41 | 2 | 133 | 83 | 62 | 10 | 8 | . | 135 | 83 | 63 |
| 35 | LD42 | 2 | 114 | 73 | 61 | 7 | 9 | . | 110 | 72 | 59 |

| | cPWV Pre2 | legPWV Pre2 | V14 | SBP Post | DBPPost | HeartRatePost | cPWVPost | legPWVPost | SBPpreAVERAGEnew |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 6 | 9.9000 | . | 101 | 68 | 72 | 6.2000 | 10.2000 | 98.50 |
| 2 | 6 | 7.8000 | . | 105 | 66 | 62 | 5.8000 | 10.2000 | 107.00 |
| 3 | . | . | . | . | . | . | . | . | . |
| 4 | 5 | 9.3000 | . | 106 | 62 | 45 | 5.4000 | 8.3000 | 119.00 |
| 5 | 6 | 9.8000 | . | 103 | 65 | 57 | 5.0000 | 10.8000 | 98.00 |
| 6 | 7 | 7.6000 | . | 106 | 64 | 72 | 6.5000 | 7.3000 | 104.50 |
| 7 | . | . | . | . | . | . | . | . | . |
| 8 | 6 | 8.5000 | . | 120 | 69 | 76 | 5.3000 | 4.4000 | 107.00 |
| 9 | 5 | 9.1000 | . | 105 | 72 | 65 | 6.0000 | 9.6000 | 107.00 |
| 10 | 7 | 11.3000 | . | 131 | 91 | 84 | 4.4000 | 9.1000 | 122.00 |
| 11 | 6 | 12.1000 | . | 119 | 78 | 74 | 5.8000 | 9.5000 | 114.00 |
| 12 | 7 | 7.7000 | . | 104 | 61 | 62 | 6.3000 | 8.7000 | 99.00 |
| 13 | . | . | . | . | . | . | . | . | . |
| 14 | 6 | 8.3000 | . | . | . | . | . | . | 104.00 |
| 15 | . | . | . | . | . | . | . | . | . |
| 16 | 7 | 10.0000 | . | 137 | 88 | 53 | 7.5000 | 5.9000 | 142.00 |
| 17 | 8 | 7.2000 | . | 120 | 82 | 83 | 7.1000 | 9.3000 | 108.50 |
| 18 | . | . | . | . | . | . | . | . | . |
| 19 | . | 6.4000 | . | . | . | . | . | . | 121.00 |
| 20 | 11 | 8.2000 | . | 150 | 80 | 64 | 8.3000 | 9.8000 | 136.50 |
| 21 | 6 | 11.4000 | . | 117 | 69 | 58 | 7.0000 | 8.8000 | 120.50 |
| 22 | 8 | 6.8000 | . | 115 | 71 | 55 | 6.5000 | 7.2000 | 119.00 |
| 23 | 8 | 9.7000 | . | . | . | . | . | . | 115.50 |
| 24 | 7 | 8.7000 | . | 107 | 70 | 62 | 6.8000 | 7.7000 | 113.00 |
| 25 | 8 | 11.1000 | . | . | . | . | . | . | 123.50 |
| 26 | 7 | 8.5000 | . | 113 | 66 | 58 | 8.1000 | 7.4000 | 107.00 |
| 27 | 8 | 12.2000 | . | 114 | 68 | 60 | 7.7000 | 10.5000 | 110.00 |
| 28 | . | . | . | . | . | . | . | . | . |
| 29 | . | . | . | . | . | . | . | . | . |
| 30 | 9 | 11.1000 | . | 137 | 89 | 62 | 9.3000 | 9.6000 | 129.00 |
| 31 | 6 | 8.1000 | . | 101 | 62 | 63 | 5.9000 | 6.6000 | 98.00 |
| 32 | 8 | 9.4000 | . | 121 | 77 | 74 | 7.2000 | 8.3000 | 118.50 |
| 33 | 10 | 10.7000 | . | . | . | . | . | . | 134.50 |
| 34 | 11 | 9.1000 | . | 132 | 75 | 65 | 8.6000 | 8.6000 | 134.00 |
| 35 | 6 | 8.9000 | . | 107 | 69 | 58 | 7.0000 | 8.6000 | 112.00 |

| | DBPpreAVERAGEnew | HRpreAVERAGEnew | CPWVpreAVERAGEnew | PPWVpreAVERAGEnew |
|---|---|---|---|---|
| 1 | 65.00 | 72.00 | 6.30 | 9.55 |
| 2 | 69.00 | 64.00 | 5.60 | 7.80 |
| 3 | . | . | . | . |
| 4 | 66.00 | 51.00 | 4.70 | 9.30 |
| 5 | 63.50 | 65.50 | 6.60 | 7.35 |
| 6 | 65.00 | 68.50 | 6.20 | 6.50 |
| 7 | . | . | . | . |
| 8 | 66.50 | 62.00 | 5.25 | 8.45 |
| 9 | 71.00 | 72.50 | 5.05 | 9.60 |
| 10 | 82.00 | 82.50 | 6.75 | 10.50 |
| 11 | 71.00 | 68.50 | 5.80 | 10.75 |
| 12 | 62.50 | 60.00 | 6.75 | 8.25 |
| 13 | . | . | . | . |
| 14 | 63.50 | 66.50 | 6.05 | 7.40 |
| 15 | . | . | . | . |
| 16 | 78.50 | 56.00 | 7.20 | 9.25 |
| 17 | 75.00 | 88.50 | 8.15 | 7.20 |
| 18 | . | . | . | . |
| 19 | 68.00 | 77.00 | . | 11.45 |
| 20 | 76.00 | 66.50 | 9.95 | 7.50 |
| 21 | 79.50 | 66.00 | 6.20 | 11.15 |
| 22 | 74.00 | 52.50 | 7.85 | 7.50 |
| 23 | 67.00 | 63.50 | 8.40 | 10.15 |
| 24 | 75.50 | 52.50 | 7.10 | 8.30 |
| 25 | 80.00 | 71.50 | 7.70 | 10.95 |
| 26 | 66.00 | 68.50 | 7.05 | 8.85 |
| 27 | 76.00 | 56.00 | 8.40 | 12.20 |
| 28 | . | . | . | . |
| 29 | . | . | . | . |
| 30 | 83.00 | 70.50 | 9.15 | 10.40 |
| 31 | 64.50 | 54.50 | 6.00 | 8.15 |
| 32 | 79.50 | 73.50 | 8.15 | 8.80 |
| 33 | 81.50 | 76.00 | 10.10 | 9.70 |
| 34 | 83.00 | 62.50 | 10.80 | 8.75 |
| 35 | 72.50 | 60.00 | 6.40 | 8.80 |

| | ID | Code1young | SBPPre1 | DBPPre1 | HeartRate | cPWVPre1 | legPWVPre1 | V8 | SBPPre2 | DBPPre2 | HeartRate_A |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 36 | LD43 | 1 | 95 | 60 | 69 | 6 | 7 | . | 102 | 65 | 58 |
| 37 | LD44 | 1 | 120 | 78 | 52 | 6 | 7 | . | 120 | 82 | 61 |
| 38 | LD45 | 1 | 110 | 71 | 55 | 7 | 9 | . | 114 | 74 | 53 |
| 39 | LD46 | 1 | 102 | 71 | 70 | 6 | 8 | . | 97 | 72 | 66 |
| 40 | LD47 | 1 | 105 | 66 | 50 | 6 | 9 | . | 105 | 67 | 56 |
| 41 | LD48 | 1 | 121 | 70 | 57 | 5 | 8 | . | 114 | 61 | 61 |

**DXA**

| | ID | Code1young | Age | Height | Weight |
|---|---|---|---|---|---|
| 1 | LD01 | 1 | 21 | 176.0 | 55.3000 |
| 2 | LD02 | 1 | 22 | 159.0 | 52.0000 |
| 3 | LD03 | 1 | 19 | 166.0 | 68.7000 |
| 4 | LD04 | 1 | 19 | 169.0 | 67.8000 |
| 5 | LD05 | 1 | 20 | 162.0 | 52.0000 |
| 6 | LD06 | 1 | 21 | 168.0 | 67.5000 |
| 7 | LD07 | 1 | 22 | 168.0 | 62.4000 |
| 8 | LD08 | 1 | 19 | 172.0 | 69.1000 |
| 9 | LD30 | 1 | 23 | 160.5 | 70.1000 |
| 10 | LD10 | 1 | 25 | 163.5 | 92.5000 |
| 11 | LD11 | 1 | 22 | 173.0 | 59.2000 |
| 12 | LD12 | 1 | 24 | 172.0 | 55.6000 |
| 13 | LD13 | 1 | 23 | 163.5 | 59.5000 |
| 14 | LD14 | 2 | 60 | 174.5 | 109.8000 |
| 15 | LD15 | 2 | 57 | 165.0 | 84.1000 |
| 16 | LD16 | 2 | 62 | 163.0 | 98.4000 |
| 17 | LD17 | 2 | 55 | 167.0 | 71.2000 |
| 18 | LD18 | 2 | 62 | 156.5 | 85.3000 |
| 19 | LD19 | 2 | 61 | 171.5 | 111.1000 |
| 20 | LD20 | 2 | 55 | 170.0 | 100.7000 |
| 21 | LD21 | 2 | 56 | 164.5 | 97.2000 |
| 22 | LD22 | 2 | 61 | 161.5 | 78.6000 |
| 23 | LD23 | 2 | 56 | 155.0 | 80.4000 |
| 24 | LD24 | 2 | 52 | 166.5 | 75.6000 |
| 25 | LD25 | 2 | 57 | 162.5 | 69.9000 |
| 26 | LD26 | 2 | 56 | 164.5 | 59.2000 |
| 27 | LD36 | 2 | 54 | 167.5 | 73.0000 |
| 28 | LD38 | 2 | 51 | 164.0 | 63.9000 |
| 29 | LD39 | 2 | 51 | 160.0 | 70.8000 |
| 30 | LD40 | 2 | 62 | 162.5 | 82.3000 |
| 31 | LD41 | 2 | 61 | 167.5 | 99.4000 |
| 32 | LD42 | 2 | 58 | 166.0 | 66.7000 |
| 33 | LD43 | 1 | 20 | 166.0 | 70.3000 |
| 34 | LD44 | 1 | 22 | 166.0 | 67.1000 |
| 35 | LD45 | 1 | 20 | 167.5 | 69.9000 |
| 36 | LD46 | 1 | 22 | 160.0 | 58.1000 |

DXA.sav

| | BMI | FatRegionTotal | FatArms | FatLegs |
|---|---|---|---|---|
| 1 | 17.9000 | 20.5000 | 20.8000 | 23.2000 |
| 2 | 20.6000 | 23.4000 | 17.0000 | 29.9000 |
| 3 | 24.9000 | 30.4000 | 25.4000 | 32.4000 |
| 4 | 23.7000 | 36.0000 | 35.3000 | 41.1000 |
| 5 | 19.8000 | 29.0000 | 23.6000 | 34.3000 |
| 6 | 23.9000 | 42.4000 | 41.8000 | 46.6000 |
| 7 | 22.1000 | 34.1000 | 25.1000 | 38.4000 |
| 8 | 23.4000 | 37.9000 | 33.9000 | 42.0000 |
| 9 | 27.2000 | 45.3000 | 38.5000 | 45.5000 |
| 10 | 34.6000 | 50.6000 | 48.1000 | 50.0000 |
| 11 | 19.8000 | 21.7000 | 20.6000 | 27.4000 |
| 12 | 18.8000 | 24.4000 | 20.8000 | 29.7000 |
| 13 | 22.3000 | 28.9000 | 18.1000 | 36.4000 |
| 14 | 36.1000 | 48.7000 | 51.6000 | 48.7000 |
| 15 | 30.9000 | 49.5000 | 45.6000 | 51.8000 |
| 16 | 37.0000 | 48.6000 | 52.6000 | 52.5000 |
| 17 | 25.5000 | 37.7000 | 32.8000 | 35.6000 |
| 18 | 34.8000 | 40.5000 | 45.5000 | 33.4000 |
| 19 | 37.8000 | 48.8000 | 50.9000 | 48.3000 |
| 20 | 34.8000 | 49.0000 | 50.1000 | 44.7000 |
| 21 | 36.9000 | 49.6000 | 51.0000 | 53.2000 |
| 22 | 30.1000 | 49.9000 | 52.3000 | 48.0000 |
| 23 | 33.5000 | 46.2000 | 46.4000 | 47.3000 |
| 24 | 27.3000 | 44.8000 | 42.1000 | 49.3000 |
| 25 | 26.5000 | 36.3000 | 37.5000 | 34.7000 |
| 26 | 21.9000 | 37.5000 | 29.2000 | 46.5000 |
| 27 | 26.0000 | 38.8000 | 38.2000 | 40.9000 |
| 28 | 23.8000 | 43.8000 | 41.9000 | 50.2000 |
| 29 | 27.7000 | 37.4000 | 37.1000 | 36.3000 |
| 30 | 31.2000 | 46.0000 | 47.8000 | 44.9000 |
| 31 | 35.4000 | 51.1000 | 49.7000 | 50.7000 |
| 32 | 24.2000 | 37.2000 | 32.5000 | 41.2000 |
| 33 | 25.5000 | 40.5000 | 38.8000 | 42.7000 |
| 34 | 24.4000 | 31.7000 | 27.2000 | 34.3000 |
| 35 | 24.9000 | 31.4000 | 34.0000 | 32.4000 |
| 36 | 22.7000 | 38.7000 | 39.5000 | 40.0000 |

| | FatTrunk | FatTotalg | FatArmsg | FatLegg |
|---|---|---|---|---|
| 1 | 20.0000 | 11344 | 1036 | 4716 |
| 2 | 21.8000 | 120983 | 834 | 5384 |
| 3 | 32.2000 | 20763 | 1899 | 8457 |
| 4 | 35.0000 | 23410 | 2691 | 9747 |
| 5 | 28.1000 | 14911 | 1117 | 6458 |
| 6 | 42.3000 | 28256 | 2849 | 11654 |
| 7 | 35.1000 | 21058 | 1488 | 8726 |
| 8 | 38.4000 | 25927 | 2418 | 10562 |
| 9 | 49.6000 | 31077 | 2748 | 10872 |
| 10 | 54.2000 | 46061 | 4324 | 14615 |
| 11 | 19.3000 | 12831 | 1190 | 5827 |
| 12 | 23.4000 | 13512 | 1028 | 5811 |
| 13 | 27.8000 | 17031 | 1038 | 8057 |
| 14 | 50.6000 | 53083 | 4537 | 18880 |
| 15 | 51.6000 | 41142 | 3790 | 15863 |
| 16 | 47.1000 | 47553 | 5031 | 19118 |
| 17 | 42.8000 | 26577 | 2409 | 8489 |
| 18 | 45.6000 | 34594 | 4037 | 8450 |
| 19 | 50.8000 | 53917 | 4993 | 17191 |
| 20 | 53.1000 | 48948 | 3970 | 13266 |
| 21 | 49.5000 | 47957 | 5065 | 17993 |
| 22 | 53.5000 | 38750 | 4338 | 11755 |
| 23 | 48.2000 | 36828 | 3833 | 12948 |
| 24 | 44.9000 | 33522 | 3370 | 13662 |
| 25 | 39.4000 | 25165 | 2704 | 7405 |
| 26 | 35.0000 | 21850 | 4653 | 10345 |
| 27 | 40.4000 | 28108 | 3111 | 9535 |
| 28 | 42.6000 | 27554 | 2930 | 11633 |
| 29 | 41.1000 | 26322 | 2831 | 7851 |
| 30 | 49.4000 | 37420 | 3980 | 10971 |
| 31 | 54.0000 | 50402 | 4210 | 17468 |

| | | | | |
|---|---|---|---|---|
| 32 | 38.5000 | 24425 | 2219 | 9097 |
| 33 | 42.0000 | 28137 | 3022 | 10662 |
| 34 | 33.5000 | 21211 | 1867 | 8451 |
| 35 | 32.3000 | 21838 | 2662 | 8292 |
| 36 | 41.2000 | 22218 | 2515 | 7416 |

|  | FatTrunkg | LeanTotalg | LeanArmsg | LeanLegsg |
|---|---|---|---|---|
| 1 | 5152 | 41426 | 3656 | 14683 |
| 2 | 5368 | 37059 | 3787 | 11762 |
| 3 | 9728 | 44625 | 5207 | 16554 |
| 4 | 10973 | 37256 | 4623 | 13025 |
| 5 | 6788 | 34146 | 3342 | 11470 |
| 6 | 12876 | 35944 | 3670 | 12474 |
| 7 | 10148 | 38105 | 4116 | 13001 |
| 8 | 12127 | 36409 | 4363 | 13501 |
| 9 | 16534 | 34820 | 4088 | 12146 |
| 10 | 26024 | 42190 | 4347 | 13540 |
| 11 | 5303 | 43586 | 4244 | 14509 |
| 12 | 6041 | 39190 | 3607 | 12801 |
| 13 | 7331 | 39147 | 4363 | 13173 |
| 14 | 28575 | 52947 | 4003 | 18666 |
| 15 | 20417 | 38806 | 4161 | 13573 |
| 16 | 22344 | 47972 | 4277 | 16230 |
| 17 | 14862 | 41489 | 4612 | 14451 |
| 18 | 21024 | 48790 | 4602 | 16013 |
| 19 | 30679 | 53553 | 4530 | 17232 |
| 20 | 30694 | 48179 | 3715 | 15301 |
| 21 | 23764 | 45811 | 4601 | 14680 |
| 22 | 21611 | 36358 | 3708 | 11917 |
| 23 | 19038 | 40392 | 4162 | 13545 |
| 24 | 15518 | 38836 | 4291 | 12995 |
| 25 | 14262 | 42021 | 4220 | 13119 |
| 26 | 9113 | 34205 | 3745 | 11097 |
| 27 | 14561 | 41646 | 4664 | 12727 |
| 28 | 12054 | 32482 | 3695 | 10613 |
| 29 | 14805 | 41118 | 4447 | 12865 |
| 30 | 21320 | 41086 | 4027 | 12527 |
| 31 | 27688 | 45641 | 4036 | 15920 |
| 32 | 12213 | 38460 | 4287 | 12020 |
| 33 | 13694 | 38440 | 4364 | 13252 |
| 34 | 10120 | 42135 | 4611 | 14928 |
| 35 | 10254 | 44759 | 4787 | 16193 |
| 36 | 11410 | 32735 | 3558 | 10303 |

| | LeanTr | BMCl | BMCA | BMCLegsg |
|---|---|---|---|---|
| 1 | 19768 | 2503.0 | 290.0 | 937 |
| 2 | 18384 | 2430.0 | 274.0 | 842 |
| 3 | 19454 | 2936.3 | 355.0 | 1090 |
| 4 | 19608 | 2464.1 | 317.4 | 936 |
| 5 | 16577 | 2360.0 | 266.0 | 873 |
| 6 | 16811 | 2393.0 | 303.0 | 890 |
| 7 | 17843 | 2611.0 | 316.0 | 973 |
| 8 | 18545 | 2814.6 | 356.9 | 1081 |
| 9 | 15751 | 2712.0 | 296.0 | 893 |
| 10 | 21099 | 2754.0 | 322.0 | 1086 |
| 11 | 21386 | 2609.0 | 343.0 | 924 |
| 12 | 18963 | 2698.0 | 309.0 | 951 |
| 13 | 18161 | 2716.0 | 328.0 | 919 |
| 14 | 26973 | 2889.0 | 257.0 | 1216 |
| 15 | 18001 | 3184.0 | 355.0 | 1199 |
| 16 | 24495 | 2404.0 | 258.0 | 1097 |
| 17 | 19135 | 2465.0 | 312.0 | 913 |
| 18 | 24492 | 2022.0 | 233.0 | 823 |
| 19 | 28678 | 3075.0 | 291.0 | 1188 |
| 20 | 26168 | 2753.0 | 246.0 | 1080 |
| 21 | 23283 | 2899.0 | 257.0 | 1117 |
| 22 | 17894 | 2504.0 | 245.0 | 813 |
| 23 | 19583 | 2525.0 | 266.0 | 881 |
| 24 | 18464 | 2392.0 | 344.0 | 1070 |
| 25 | 21337 | 2082.0 | 284.0 | 817 |
| 26 | 16312 | 2196.0 | 268.0 | 805 |
| 27 | 20714 | 2678.0 | 363.0 | 1047 |
| 28 | 15251 | 2934.0 | 370.0 | 945 |
| 29 | 20300 | 2852.0 | 342.0 | 910 |
| 30 | 20951 | 2769.0 | 311.0 | 916 |
| 31 | 22767 | 2589.0 | 219.0 | 1075 |
| ... | 18727 | 2764.0 | 326.0 | 978 |
| 33 | 17920 | 2936.0 | 411.0 | 1084 |
| 34 | 18988 | 3480.0 | 418.0 | 1295 |
| 35 | 20590 | 2861.0 | 369.0 | 1078 |
| 36 | 15530 | 2409.0 | 294.0 | 839 |

| | BMCTrunkg | PRE2 | Weight_A | BMI_A | FatRegionTotal_A |
|---|---|---|---|---|---|
| 1 | 788.0 | . | 56.0000 | 18.1000 | 19.6000 |
| 2 | 901.0 | . | 52.0000 | 20.6000 | 23.4000 |
| 3 | 991.7 | . | 68.7000 | 24.9000 | 30.4000 |
| 4 | 787.0 | . | 67.8000 | 23.7000 | 36.0000 |
| 5 | 798.0 | . | 52.2000 | 19.9000 | 28.3000 |
| 6 | 768.0 | . | 68.2000 | 24.2000 | 41.4000 |
| 7 | 898.0 | . | 62.3000 | 22.1000 | 33.4000 |
| 8 | 883.1 | . | 69.6000 | 23.5000 | 39.2000 |
| 9 | 1068.0 | . | 69.8000 | 27.1000 | 41.7000 |
| 10 | 912.0 | . | 89.1000 | 33.3000 | 48.4000 |
| 11 | 812.0 | . | 59.7000 | 19.9000 | 20.9000 |
| 12 | 844.0 | . | 56.2000 | 19.0000 | 24.1000 |
| 13 | 885.0 | . | 60.7000 | 22.7000 | 28.7000 |
| 14 | 884.0 | . | 109.8000 | 36.1000 | 48.7000 |
| 15 | 1118.0 | . | 84.1000 | 30.9000 | 48.1000 |
| 16 | 597.0 | . | 98.8000 | 37.2000 | 46.9000 |
| 17 | 728.0 | . | 71.2000 | 25.5000 | 37.7000 |
| 18 | 572.0 | . | 84.8000 | 34.6000 | 41.2000 |
| 19 | 1038.0 | . | 111.8000 | 38.8000 | 46.8000 |
| 20 | 980.0 | . | 100.7000 | 34.8000 | 47.6000 |
| 21 | 969.0 | . | 98.9000 | 36.5000 | 49.1000 |
| 22 | 881.0 | . | 78.2000 | 30.0000 | 49.8000 |
| 23 | 867.0 | . | 80.9000 | 33.7000 | 45.3000 |
| 24 | 547.0 | . | 74.4000 | 26.8000 | 44.5000 |
| 25 | 617.0 | . | 68.3000 | 25.9000 | 38.0000 |
| 26 | 618.0 | . | 59.2000 | 21.9000 | 37.5000 |
| 27 | 754.0 | . | 73.7000 | 26.3000 | 38.7000 |
| 28 | 967.0 | . | 65.3000 | 24.3000 | 43.7000 |
| 29 | 932.0 | . | 70.5000 | 27.5000 | 37.7000 |
| 30 | 876.0 | . | 82.7000 | 31.3000 | 46.2000 |
| 31 | 779.0 | . | 98.2000 | 35.0000 | 51.3000 |
| 32 | 791.0 | . | 66.1000 | 24.0000 | 37.5000 |
| 33 | 966.0 | . | 71.2000 | 25.8000 | 42.3000 |
| 34 | 1085.0 | . | 67.7000 | 24.6000 | 31.8000 |
| 35 | 951.0 | . | 69.3000 | 24.7000 | 31.5000 |
| 36 | 734.0 | . | 58.6000 | 22.9000 | 37.8000 |

| | FatArms_A | FatLegs_A | FatTrunk_A | FatTotalg_A |
|---|---|---|---|---|
| 1 | 20.7000 | 23.2000 | 18.3000 | 10818 |
| 2 | 17.0000 | 29.9000 | 21.8000 | 120983 |
| 3 | 25.4000 | 32.4000 | 32.2000 | 20763 |
| 4 | 35.3000 | 41.1000 | 35.0000 | 23410 |
| 5 | 24.4000 | 33.7000 | 27.1000 | 14601 |
| 6 | 42.3000 | 46.9000 | 39.7000 | 27915 |
| 7 | 25.0000 | 37.8000 | 34.4000 | 20577 |
| 8 | 34.9000 | 44.3000 | 39.1000 | 26927 |
| 9 | 38.4000 | 43.8000 | 43.8000 | 28757 |
| 10 | 47.4000 | 46.6000 | 52.4000 | 42594 |
| 11 | 20.8000 | 27.4000 | 17.5000 | 12341 |
| 12 | 22.5000 | 29.0000 | 23.1000 | 13430 |
| 13 | 18.0000 | 36.8000 | 26.7000 | 17278 |
| 14 | 51.6000 | 48.7000 | 50.6000 | 53083 |
| 15 | 46.7000 | 49.8000 | 50.3000 | 39994 |
| 16 | 54.4000 | 50.1000 | 45.3000 | 46142 |
| 17 | 32.8000 | 35.6000 | 42.8000 | 26577 |
| 18 | 46.9000 | 33.3000 | 46.9000 | 34844 |
| 19 | 49.6000 | 47.9000 | 47.5000 | 51938 |
| 20 | 50.5000 | 44.0000 | 51.3000 | 47505 |
| 21 | 49.9000 | 51.3000 | 50.1000 | 48018 |
| 22 | 51.7000 | 49.5000 | 52.5000 | 38489 |
| 23 | 46.3000 | 46.8000 | 46.8000 | 36338 |
| 24 | 40.1000 | 49.3000 | 44.7000 | 32671 |
| 25 | 37.3000 | 33.9000 | 43.1000 | 25655 |
| 26 | 29.2000 | 46.5000 | 35.0000 | 21850 |
| 27 | 37.6000 | 40.5000 | 40.4000 | 28207 |
| 28 | 39.1000 | 49.8000 | 43.8000 | 28127 |
| 29 | 36.0000 | 37.0000 | 41.3000 | 26253 |
| 30 | 46.0000 | 44.7000 | 50.2000 | 37858 |
| 31 | 50.9000 | 49.4000 | 55.2000 | 49802 |
| 32 | 32.8000 | 41.4000 | 38.7000 | 24552 |
| 33 | 38.6000 | 43.1000 | 45.5000 | 29731 |
| 34 | 26.8000 | 34.0000 | 33.8000 | 21417 |
| 35 | 33.8000 | 32.4000 | 32.4000 | 21646 |
| 36 | 38.3000 | 38.3000 | 40.7000 | 21881 |

| | FatArmsg_A | FatLegg_A | FatTrunkg_A | LeanTotalg_A |
|---|---|---|---|---|
| 1 | 1034 | 4295 | 5067 | 41943 |
| 2 | 834 | 5384 | 5368 | 37059 |
| 3 | 1899 | 8457 | 9728 | 44625 |
| 4 | 2691 | 9747 | 10973 | 37256 |
| 5 | 1225 | 6298 | 6537 | 34703 |
| 6 | 2989 | 11721 | 12345 | 37215 |
| 7 | 1575 | 8367 | 9980 | 38421 |
| 8 | 2478 | 11517 | 12089 | 38984 |
| 9 | 2694 | 10456 | 14790 | 37742 |
| 10 | 3864 | 13216 | 24418 | 42818 |
| 11 | 1293 | 5792 | 4764 | 44085 |
| 12 | 1160 | 5389 | 6276 | 39708 |
| 13 | 1111 | 8840 | 6701 | 40082 |
| 14 | 4537 | 18880 | 28575 | 52947 |
| 15 | 4065 | 14962 | 19902 | 39947 |
| 16 | 4817 | 18398 | 21901 | 49923 |
| 17 | 2409 | 8489 | 14862 | 41489 |
| 18 | 4501 | 8562 | 20634 | 47583 |
| 19 | 5069 | 19568 | 26342 | 56040 |
| 20 | 3718 | 13853 | 26854 | 49552 |
| 21 | 5338 | 17549 | 23941 | 46922 |
| 22 | 4236 | 11866 | 21313 | 36371 |
| 23 | 3980 | 12576 | 18744 | 41255 |
| 24 | 3163 | 13425 | 15118 | 38277 |
| 25 | 2678 | 7135 | 15045 | 39793 |
| 26 | 4653 | 10345 | 9113 | 34205 |
| 27 | 2988 | 9284 | 15045 | 41997 |
| 28 | 2760 | 11432 | 12993 | 33249 |
| 29 | 2678 | 7908 | 14836 | 40579 |
| 30 | 3845 | 11550 | 21301 | 41133 |
| 31 | 4068 | 17266 | 27416 | 44724 |
| 32 | 2253 | 9294 | 12114 | 38210 |
| 33 | 3022 | 10623 | 15256 | 37441 |
| 34 | 1882 | 8302 | 10507 | 42429 |
| 35 | 2568 | 7893 | 10550 | 44281 |
| 36 | 2328 | 7323 | 11367 | 33685 |

| | LeanArmsg_A | LeanLegsg_A | LeanTrunkg_A | BMCtotalg_A |
|---|---|---|---|---|
| 1 | 3684 | 13292 | 21814 | 2507.0 |
| 2 | 3787 | 11762 | 18384 | 2430.0 |
| 3 | 5207 | 16554 | 19454 | 2936.3 |
| 4 | 4623 | 13025 | 19608 | 2464.1 |
| 5 | 3513 | 11541 | 16819 | 2374.0 |
| 6 | 3782 | 12394 | 17971 | 2376.0 |
| 7 | 4408 | 12809 | 18153 | 2628.0 |
| 8 | 4277 | 13410 | 18017 | 2779.7 |
| 9 | 4035 | 12581 | 18181 | 2418.0 |
| 10 | 4001 | 14139 | 21292 | 2641.0 |
| 11 | 4571 | 14462 | 21639 | 2599.0 |
| 12 | 3684 | 12242 | 20033 | 2688.0 |
| 13 | 4720 | 14215 | 17605 | 2778.0 |
| 14 | 4003 | 18666 | 26973 | 2889.0 |
| 15 | 4238 | 13972 | 18615 | 3122.0 |
| 16 | 3796 | 17245 | 25812 | 2323.0 |
| 17 | 4612 | 14451 | 19135 | 2465.0 |
| 18 | 4856 | 16320 | 22696 | 2085.0 |
| 19 | 4857 | 20026 | 28232 | 2893.0 |
| 20 | 3404 | 16482 | 26458 | 2712.0 |
| 21 | 5010 | 15573 | 22923 | 2909.0 |
| 22 | 3712 | 11299 | 18438 | 2467.0 |
| 23 | 4372 | 13417 | 20346 | 2583.0 |
| 24 | 4372 | 12753 | 18103 | 2419.0 |
| 25 | 4209 | 13120 | 19212 | 2090.0 |
| 26 | 3745 | 11097 | 16312 | 2196.0 |
| 27 | 4613 | 12605 | 21337 | 2744.0 |
| 28 | 3941 | 10615 | 15651 | 2945.0 |
| 29 | 4408 | 12525 | 20175 | 2862.0 |
| 30 | 4217 | 13328 | 20161 | 2876.0 |
| 31 | 3705 | 16672 | 21396 | 2640.0 |
| 32 | 4285 | 12154 | 18402 | 2755.0 |
| 33 | 4408 | 12930 | 17135 | 3111.0 |
| 34 | 4741 | 14810 | 19421 | 3568.0 |
| 35 | 4673 | 15404 | 21026 | 2871.0 |
| 36 | 3465 | 10985 | 15808 | 2377.0 |

| | BMCArmsg_A | BMCLegsg_A | BMCTrunkg_A | POST | Weight_B |
|---|---|---|---|---|---|
| 1 | 286.0000 | 925.0000 | 806.0 | . | 55.3000 |
| 2 | 274.0000 | 842.0000 | 901.0 | . | 53.5000 |
| 3 | 355.0000 | 1090.3000 | 991.7 | . | . |
| 4 | 317.4000 | 936.3000 | 787.0 | . | 69.8000 |
| 5 | 278.0000 | 854.0000 | 809.0 | . | 54.3000 |
| 6 | 303.0000 | 884.0000 | 741.0 | . | 69.9000 |
| 7 | 324.0000 | 980.0000 | 899.0 | . | . |
| 8 | 351.4000 | 1085.4000 | 847.7 | . | 70.5000 |
| 9 | 282.0000 | 850.0000 | 829.0 | . | 69.3000 |
| 10 | 284.0000 | 1035.0000 | 881.0 | . | 90.0000 |
| 11 | 361.0000 | 912.0000 | 790.0 | . | 59.5000 |
| 12 | 311.0000 | 929.0000 | 812.0 | . | 56.3000 |
| 13 | 347.0000 | 940.0000 | 826.0 | . | . |
| 14 | 257.0000 | 1216.0000 | 884.0 | . | . |
| 15 | 394.0000 | 1134.0000 | 1079.0 | . | 84.2000 |
| 16 | 235.0000 | 1069.0000 | 582.0 | . | 100.5000 |
| 17 | 312.0000 | 913.0000 | 728.0 | . | . |
| 18 | 240.0000 | 818.0000 | 632.0 | . | . |
| 19 | 299.0000 | 1232.0000 | 848.0 | . | 114.2000 |
| 20 | 233.0000 | 1115.0000 | 911.0 | . | 101.4000 |
| 21 | 342.0000 | 1098.0000 | 914.0 | . | 101.3000 |
| 22 | 244.0000 | 817.0000 | 857.0 | . | . |
| 23 | 245.0000 | 903.0000 | 935.0 | . | 81.6000 |
| 24 | 346.0000 | 1075.0000 | 577.0 | . | . |
| 25 | 292.0000 | 794.0000 | 640.0 | . | 69.3000 |
| 26 | 268.0000 | 805.0000 | 618.0 | . | 58.0000 |
| 27 | 352.0000 | 1043.0000 | 840.0 | . | 73.4000 |
| 28 | 353.0000 | 919.0000 | 1033.0 | . | 64.6000 |
| 29 | 343.0000 | 917.0000 | 949.0 | . | 70.5000 |
| 30 | 301.0000 | 942.0000 | 974.0 | . | . |
| 31 | 222.0000 | 1042.0000 | 856.0 | . | 98.2000 |
| 32 | 322.0000 | 981.0000 | 802.0 | . | 66.4000 |
| 33 | 405.0000 | 1083.0000 | 1139.0 | . | 69.9000 |
| 34 | 411.0000 | 1275.0000 | 1132.0 | . | 68.1000 |
| 35 | 362.0000 | 1096.0000 | 987.0 | . | 68.8000 |
| 36 | 288.0000 | 805.0000 | 733.0 | . | 60.9000 |

| | BMI_B | FatRegionTotal_B | FatArms_B | FatLegs_B |
|---|---|---|---|---|
| 1 | 17.9000 | 19.6000 | 20.2000 | 23.9000 |
| 2 | 21.2000 | 26.7000 | 21.4000 | 32.3000 |
| 3 | . | . | . | . |
| 4 | 24.4000 | 37.5000 | 35.4000 | 41.8000 |
| 5 | 20.7000 | 27.7000 | 22.0000 | 33.3000 |
| 6 | 24.8000 | 42.4000 | 41.8000 | 47.9000 |
| 7 | . | . | . | . |
| 8 | 23.8000 | 39.3000 | 33.7000 | 44.2000 |
| 9 | 26.9000 | 41.3000 | 38.8000 | 45.1000 |
| 10 | 33.7000 | 47.0000 | 43.9000 | 44.5000 |
| 11 | 19.9000 | 20.0000 | 18.4000 | 26.0000 |
| 12 | 19.0000 | 24.5000 | 20.5000 | 29.2000 |
| 13 | . | . | . | . |
| 14 | . | . | . | . |
| 15 | 30.9000 | 49.4000 | 45.9000 | 50.7000 |
| 16 | 37.8000 | 46.2000 | 54.7000 | 48.4000 |
| 17 | . | . | . | . |
| 18 | . | . | . | . |
| 19 | 38.8000 | 47.3000 | 50.6000 | 48.0000 |
| 20 | 35.1000 | 48.7000 | 48.1000 | 42.5000 |
| 21 | 37.4000 | 48.6000 | 50.9000 | 49.7000 |
| 22 | . | . | . | . |
| 23 | 34.0000 | 46.6000 | 45.7000 | 48.3000 |
| 24 | . | . | . | . |
| 25 | 26.2000 | 37.2000 | 34.2000 | 33.2000 |
| 26 | 21.4000 | 36.4000 | 29.1000 | 44.5000 |
| 27 | 26.1617 | 38.9000 | 39.4000 | 39.3000 |
| 28 | 24.0184 | 43.4000 | 40.4000 | 49.5000 |
| 29 | 27.5391 | 35.8000 | 34.7000 | 35.1000 |
| 30 | . | . | . | . |
| 31 | 35.0011 | 51.1000 | 51.0000 | 49.3000 |
| 32 | 24.0964 | 35.3000 | 32.8000 | 39.5000 |
| 33 | 25.3665 | 38.8000 | 36.2000 | 40.3000 |
| 34 | 24.7133 | 29.7000 | 26.1000 | 32.2000 |
| 35 | 24.5222 | 29.1000 | 31.5000 | 30.9000 |
| 36 | 23.7891 | 36.9000 | 38.5000 | 37.0000 |

| | FatTrunk_B | FatTotalg_B | FatArmsg_B | FatLegg_B |
|---|---|---|---|---|
| 1 | 18.1000 | 11018 | 1084 | 4352 |
| 2 | 25.9000 | 14156 | 1227 | 6122 |
| 3 | . | . | . | . |
| 4 | 37.3000 | 25924 | 2720 | 10799 |
| 5 | 26.5000 | 14866 | 1149 | 6577 |
| 6 | 41.2000 | 29232 | 3165 | 12376 |
| 7 | . | . | . | . |
| 8 | 39.7000 | 27456 | 2451 | 11485 |
| 9 | 41.8000 | 28285 | 2740 | 11064 |
| 10 | 51.6000 | 41881 | 3598 | 12365 |
| 11 | 17.0000 | 11813 | 1202 | 5615 |
| 12 | 24.1000 | 13705 | 1050 | 5638 |
| 13 | . | . | . | . |
| 14 | . | . | . | . |
| 15 | 52.3000 | 41036 | 4102 | 14843 |
| 16 | 45.4000 | 46065 | 4160 | 18103 |
| 17 | . | . | . | . |
| 18 | . | . | . | . |
| 19 | 48.1000 | 53757 | 5089 | 19233 |
| 20 | 54.3000 | 48945 | 4055 | 13523 |
| 21 | 50.1000 | 48690 | 5757 | 17802 |
| 22 | . | . | . | . |
| 23 | 48.3000 | 37723 | 4283 | 13194 |
| 24 | . | . | . | . |
| 25 | 42.3000 | 25581 | 2346 | 6959 |
| 26 | 35.0000 | 20761 | 1730 | 9164 |
| 27 | 41.2000 | 28212 | 3288 | 9174 |
| 28 | 42.9000 | 27673 | 2831 | 11290 |
| 29 | 39.3000 | 25035 | 2553 | 7607 |
| 30 | . | . | . | . |
| 31 | 54.9000 | 49687 | 4036 | 17261 |
| 32 | 35.8000 | 23211 | 2355 | 8705 |
| 33 | 41.1000 | 26905 | 2869 | 10456 |
| 34 | 31.1000 | 20152 | 1948 | 8044 |
| 35 | 29.1000 | 19931 | 2628 | 7477 |
| 36 | 39.8000 | 22296 | 2657 | 7251 |

| | FatTrunkg_B | LeanTotalg_B | LeanArmsg_B | LeanLegsg_B |
|---|---|---|---|---|
| 1 | 5141 | 42767 | 3991 | 12945 |
| 2 | 6274 | 36402 | 4190 | 11983 |
| 3 | . | . | . | . |
| 4 | 11559 | 40700 | 4654 | 14080 |
| 5 | 6600 | 36374 | 3809 | 12331 |
| 6 | 12831 | 37286 | 4093 | 12558 |
| 7 | . | . | . | . |
| 8 | 12706 | 39503 | 4474 | 13412 |
| 9 | 13739 | 37902 | 4029 | 12593 |
| 10 | 24823 | 44630 | 4314 | 14399 |
| 11 | 4507 | 44686 | 4979 | 15081 |
| 12 | 6403 | 39586 | 3767 | 12710 |
| 13 | . | . | . | . |
| 14 | . | . | . | . |
| 15 | 21054 | 38780 | 4426 | 13297 |
| 16 | 22782 | 51459 | 3256 | 18238 |
| 17 | . | . | . | . |
| 18 | . | . | . | . |
| 19 | 28454 | 57001 | 4680 | 19553 |
| 20 | 30304 | 48768 | 4122 | 17148 |
| 21 | 23944 | 48632 | 5243 | 16914 |
| 22 | . | . | . | . |
| 23 | 19190 | 40609 | 4792 | 13183 |
| 24 | . | . | . | . |
| 25 | 15464 | 41081 | 4235 | 13193 |
| 26 | 9163 | 34117 | 3938 | 10659 |
| 27 | 14857 | 41599 | 4688 | 13107 |
| 28 | 12639 | 33163 | 3819 | 10572 |
| 29 | 14078 | 42019 | 4479 | 13128 |
| 30 | . | . | . | . |
| 31 | 27360 | 44855 | 3657 | 16679 |
| 32 | 11298 | 39907 | 4485 | 12356 |
| 33 | 12864 | 39432 | 4665 | 14417 |
| 34 | 9420 | 44157 | 5071 | 15657 |
| 35 | 9213 | 45736 | 5321 | 15639 |
| 36 | 11567 | 35698 | 3945 | 11530 |

| | LeanTrunkg_B | BMCtotalg_B | BMCArmsg_B | BMCLegsg_B |
|---|---|---|---|---|
| 1 | 22479 | 2490 | 292 | 930 |
| 2 | 17101 | 2438 | 312 | 832 |
| 3 | . | . | . | . |
| 4 | 18622 | 2502 | 310 | 938 |
| 5 | 17428 | 2407 | 267 | 869 |
| 6 | 17583 | 2347 | 305 | 892 |
| 7 | . | . | . | . |
| 8 | 18399 | 2832 | 354 | 1090 |
| 9 | 18416 | 2328 | 293 | 882 |
| 10 | 22443 | 2606 | 278 | 1008 |
| 11 | 21212 | 2638 | 360 | 932 |
| 12 | 19370 | 2689 | 310 | 948 |
| 13 | . | . | . | . |
| 14 | . | . | . | . |
| 15 | 18062 | 3212 | 400 | 1136 |
| 16 | 26755 | 2285 | 192 | 1034 |
| 17 | . | . | . | . |
| 18 | . | . | . | . |
| 19 | 29806 | 3000 | 287 | 1261 |
| 20 | 24427 | 2857 | 259 | 1118 |
| 21 | 23039 | 2808 | 311 | 1109 |
| 22 | . | . | . | . |
| 23 | 19542 | 2689 | 296 | 928 |
| 24 | . | . | . | . |
| 25 | 20405 | 2130 | 281 | 791 |
| 26 | 16425 | 2157 | 278 | 791 |
| 27 | 20356 | 2781 | 366 | 1041 |
| 28 | 15838 | 2932 | 361 | 940 |
| 29 | 20862 | 2798 | 333 | 910 |
| 30 | . | . | . | . |
| 31 | 21589 | 2627 | 219 | 1038 |
| 32 | 19546 | 2692 | 342 | 969 |
| 33 | 17428 | 2964 | 400 | 1068 |
| 34 | 19828 | 3512 | 436 | 1302 |
| 35 | 21545 | 2846 | 392 | 1100 |
| 36 | 16824 | 2352 | 304 | 813 |

| | BMCTrunkg_B | WeightPreAverage | PercentFatTotalPreAverage1 |
|---|---|---|---|
| 1 | 787 | 55.65 | 20.05 |
| 2 | 892 | 52.00 | 23.40 |
| 3 | . | 68.70 | 30.40 |
| 4 | 831 | 67.80 | 36.00 |
| 5 | 833 | 52.10 | 28.65 |
| 6 | 727 | 67.85 | 41.90 |
| 7 | . | 62.35 | 33.75 |
| 8 | 898 | 69.35 | 38.55 |
| 9 | 707 | 69.95 | 43.50 |
| 10 | 871 | 90.80 | 49.50 |
| 11 | 803 | 59.45 | 21.30 |
| 12 | 815 | 55.90 | 24.25 |
| 13 | . | 60.10 | 28.80 |
| 14 | . | 109.80 | 48.70 |
| 15 | 1170 | 84.10 | 48.80 |
| 16 | 620 | 98.60 | 47.75 |
| 17 | . | 71.20 | 37.70 |
| 18 | . | 85.05 | 40.85 |
| 19 | 930 | 111.45 | 47.80 |
| 20 | 1034 | 100.70 | 48.30 |
| 21 | 837 | 98.05 | 49.35 |
| 22 | . | 78.40 | 49.85 |
| 23 | 961 | 80.65 | 45.75 |
| 24 | . | 75.00 | 44.65 |
| 25 | 694 | 69.10 | 37.15 |
| 26 | 577 | 59.20 | 37.50 |
| 27 | 868 | 73.35 | 38.75 |
| 28 | 1003 | 64.60 | 43.75 |
| 29 | 898 | 70.65 | 37.55 |
| 30 | . | 82.50 | 46.10 |
| 31 | 850 | 98.80 | 51.20 |
| 32 | 748 | 66.40 | 37.35 |
| 33 | 1017 | 70.75 | 41.40 |
| 34 | 1066 | 67.40 | 31.75 |
| 35 | 905 | 69.60 | 31.45 |
| 36 | 703 | 58.35 | 38.25 |

| | PercentFatArmsPreAverage1 | PercentFatLegsPreAverage1 |
|---|---|---|
| 1 | 20.75 | 23.20 |
| 2 | 17.00 | 29.90 |
| 3 | 25.40 | 32.40 |
| 4 | 35.30 | 41.10 |
| 5 | 24.00 | 34.00 |
| 6 | 42.05 | 46.75 |
| 7 | 25.05 | 38.10 |
| 8 | 34.40 | 43.15 |
| 9 | 38.45 | 44.65 |
| 10 | 47.75 | 48.30 |
| 11 | 20.70 | 27.40 |
| 12 | 21.65 | 29.35 |
| 13 | 18.05 | 36.60 |
| 14 | 51.60 | 48.70 |
| 15 | 46.15 | 50.80 |
| 16 | 53.50 | 51.30 |
| 17 | 32.80 | 35.60 |
| 18 | 46.20 | 33.35 |
| 19 | 50.25 | 48.10 |
| 20 | 50.30 | 44.35 |
| 21 | 50.45 | 52.25 |
| 22 | 52.00 | 48.75 |
| 23 | 46.35 | 47.05 |
| 24 | 41.10 | 49.30 |
| 25 | 37.40 | 34.30 |
| 26 | 29.20 | 46.50 |
| 27 | 37.90 | 40.70 |
| 28 | 40.50 | 50.00 |
| 29 | 36.55 | 36.65 |
| 30 | 46.90 | 44.80 |
| 31 | 50.30 | 50.05 |
| 32 | 32.65 | 41.30 |
| 33 | 38.70 | 42.90 |
| 34 | 27.00 | 34.15 |
| 35 | 33.90 | 32.40 |
| 36 | 38.90 | 39.15 |

| | PercentFatTrunkPreAverage | FatTotalPreAverage |
|---|---|---|
| 1 | 19.15 | 11081.00 |
| 2 | 21.80 | 120983.00 |
| 3 | 32.20 | 20763.00 |
| 4 | 35.00 | 23410.00 |
| 5 | 27.60 | 14756.00 |
| 6 | 41.00 | 28085.50 |
| 7 | 34.75 | 20817.50 |
| 8 | 38.75 | 26427.00 |
| 9 | 46.70 | 29917.00 |
| 10 | 53.30 | 44327.50 |
| 11 | 18.40 | 12586.00 |
| 12 | 23.25 | 13471.00 |
| 13 | 27.25 | 17154.50 |
| 14 | 50.60 | 53083.00 |
| 15 | 50.95 | 40568.00 |
| 16 | 46.20 | 46847.50 |
| 17 | 42.80 | 26577.00 |
| 18 | 46.25 | 34719.00 |
| 19 | 49.15 | 52927.50 |
| 20 | 52.20 | 48226.50 |
| 21 | 49.80 | 47987.50 |
| 22 | 53.00 | 38619.50 |
| 23 | 47.50 | 36583.00 |
| 24 | 44.80 | 33096.50 |
| 25 | 41.25 | 25410.00 |
| 26 | 35.00 | 21850.00 |
| 27 | 40.40 | 28157.50 |
| 28 | 43.20 | 27840.50 |
| 29 | 41.20 | 26287.50 |
| 30 | 49.80 | 37639.00 |
| 31 | 54.60 | 50102.00 |
| 32 | 38.60 | 24488.50 |
| 33 | 43.75 | 28934.00 |
| 34 | 33.65 | 21314.00 |
| 35 | 32.35 | 21742.00 |
| 36 | 40.95 | 22049.50 |

| | FatArmsPreAverage | FatLegsPreAverage |
|---|---|---|
| 1 | 1035.00 | 4505.50 |
| 2 | 834.00 | 5384.00 |
| 3 | 1899.00 | 8457.00 |
| 4 | 2691.00 | 9747.00 |
| 5 | 1171.00 | 6378.00 |
| 6 | 2919.00 | 11687.50 |
| 7 | 1531.50 | 8546.50 |
| 8 | 2448.00 | 11039.50 |
| 9 | 2721.00 | 10664.00 |
| 10 | 4094.00 | 13915.50 |
| 11 | 1241.50 | 5809.50 |
| 12 | 1094.00 | 5600.00 |
| 13 | 1074.50 | 8448.50 |
| 14 | 4537.00 | 18880.00 |
| 15 | 3927.50 | 15412.50 |
| 16 | 4924.00 | 18758.00 |
| 17 | 2409.00 | 8489.00 |
| 18 | 4269.00 | 8506.00 |
| 19 | 5031.00 | 18379.50 |
| 20 | 3844.00 | 13559.50 |
| 21 | 5201.50 | 17771.00 |
| 22 | 4287.00 | 11810.50 |
| 23 | 3906.50 | 12762.00 |
| 24 | 3266.50 | 13543.50 |
| 25 | 2691.00 | 7270.00 |
| 26 | 4653.00 | 10345.00 |
| 27 | 3049.50 | 9409.50 |
| 28 | 2845.00 | 11532.50 |
| 29 | 2754.50 | 7879.50 |
| 30 | 3912.50 | 11260.50 |
| 31 | 4139.00 | 17367.00 |
| 32 | 2236.00 | 9195.50 |
| 33 | 3022.00 | 10642.50 |
| 34 | 1874.50 | 8376.50 |
| 35 | 2615.00 | 8092.50 |
| 36 | 2421.50 | 7369.50 |

| | FatTrunkPreAverage | LeanTotalPreAverage |
|---|---|---|
| 1 | 5109.50 | 41684.50 |
| 2 | 5368.00 | 37059.00 |
| 3 | 9728.00 | 44625.00 |
| 4 | 10973.00 | 37256.00 |
| 5 | 6662.50 | 34424.50 |
| 6 | 12610.50 | 36579.50 |
| 7 | 10064.00 | 38263.00 |
| 8 | 12108.00 | 37696.50 |
| 9 | 15662.00 | 36281.00 |
| 10 | 25221.00 | 42504.00 |
| 11 | 5033.50 | 43835.50 |
| 12 | 6158.50 | 39449.00 |
| 13 | 7016.00 | 39614.50 |
| 14 | 28575.00 | 52947.00 |
| 15 | 20159.50 | 39376.50 |
| 16 | 22122.50 | 48947.50 |
| 17 | 14862.00 | 41489.00 |
| 18 | 20829.00 | 48186.50 |
| 19 | 28510.50 | 54796.50 |
| 20 | 29774.00 | 48865.50 |
| 21 | 23852.50 | 46366.50 |
| 22 | 21462.00 | 36364.50 |
| 23 | 18891.00 | 40823.50 |
| 24 | 15318.00 | 38556.50 |
| 25 | 14653.50 | 40907.00 |
| 26 | 9113.00 | 34205.00 |
| 27 | 14803.00 | 41821.50 |
| 28 | 12523.50 | 32865.50 |

| | | |
|---|---|---|
| 29 | 14820.50 | 40848.50 |
| 30 | 21310.50 | 41109.50 |
| 31 | 27552.00 | 45182.50 |
| 32 | 12163.50 | 38335.00 |
| 33 | 14475.00 | 37940.50 |
| 34 | 10313.50 | 42282.00 |
| 35 | 10402.00 | 44520.00 |
| 36 | 11388.50 | 33210.00 |

| | LeanArmsPreAverage | LeanLegsPreAverage |
|---|---|---|
| 1 | 3670.00 | 13987.50 |
| 2 | 3787.00 | 11762.00 |
| 3 | 5207.00 | 16554.00 |
| 4 | 4623.00 | 13025.00 |
| 5 | 3427.50 | 11505.50 |
| 6 | 3726.00 | 12434.00 |
| 7 | 4262.00 | 12905.00 |
| 8 | 4320.00 | 13455.50 |
| 9 | 4061.50 | 12363.50 |
| 10 | 4174.00 | 13839.50 |
| 11 | 4407.50 | 14485.50 |
| 12 | 3645.50 | 12521.50 |
| 13 | 4541.50 | 13694.00 |
| 14 | 4003.00 | 18666.00 |
| 15 | 4199.50 | 13772.50 |
| 16 | 4036.50 | 16737.50 |
| 17 | 4612.00 | 14451.00 |
| 18 | 4729.00 | 16166.50 |
| 19 | 4693.50 | 18629.00 |
| 20 | 3559.50 | 15891.50 |
| 21 | 4805.50 | 15126.50 |
| 22 | 3710.00 | 11608.00 |
| 23 | 4267.00 | 13481.00 |
| 24 | 4331.50 | 12874.00 |
| 25 | 4214.50 | 13119.50 |
| 26 | 3745.00 | 11097.00 |
| 27 | 4638.50 | 12666.00 |
| 28 | 3818.00 | 10614.00 |
| 29 | 4427.50 | 12695.00 |
| 30 | 4122.00 | 12927.50 |
| 31 | 3870.50 | 16296.00 |
| 32 | 4286.00 | 12087.00 |
| 33 | 4386.00 | 13091.00 |
| 34 | 4676.00 | 14869.00 |
| 35 | 4730.00 | 15798.50 |
| 36 | 3511.50 | 10644.00 |

| | LeanTrunkPreAverage | BMCTotalPreAverage |
|---|---|---|
| 1 | 20791.00 | 2505.00 |
| 2 | 18384.00 | 2430.00 |
| 3 | 19454.00 | 2936.30 |
| 4 | 19608.00 | 2464.10 |
| 5 | 16698.00 | 2367.00 |
| 6 | 17391.00 | 2384.50 |
| 7 | 17998.00 | 2619.50 |
| 8 | 18281.00 | 2797.15 |
| 9 | 16966.00 | 2565.00 |
| 10 | 21195.50 | 2697.50 |
| 11 | 21512.50 | 2604.00 |
| 12 | 19498.00 | 2693.00 |
| 13 | 17883.00 | 2747.00 |
| 14 | 26973.00 | 2889.00 |
| 15 | 18308.00 | 3153.00 |
| 16 | 25153.50 | 2363.50 |
| 17 | 19135.00 | 2465.00 |
| 18 | 23594.00 | 2053.50 |
| 19 | 28455.00 | 2984.00 |
| 20 | 26313.00 | 2732.50 |
| 21 | 23103.00 | 2904.00 |
| 22 | 18166.00 | 2485.50 |
| 23 | 19964.50 | 2554.00 |
| 24 | 18283.50 | 2405.50 |
| 25 | 20274.50 | 2086.00 |
| 26 | 16312.00 | 2196.00 |
| 27 | 21025.50 | 2711.00 |
| 28 | 15451.00 | 2939.50 |
| 29 | 20237.50 | 2857.00 |
| 30 | 20556.00 | 2822.50 |
| 31 | 22081.50 | 2614.50 |
| 32 | 18564.50 | 2759.50 |
| 33 | 17527.50 | 3023.50 |
| 34 | 19204.50 | 3524.00 |
| 35 | 20808.00 | 2866.00 |
| 36 | 15669.00 | 2393.00 |

| | BMCArmsPreAverage | BMCLegsPreAverage |
|---|---|---|
| 1 | 288.00 | 931.00 |
| 2 | 274.00 | 842.00 |
| 3 | 355.00 | 1090.30 |
| 4 | 317.40 | 936.30 |
| 5 | 272.00 | 863.50 |
| 6 | 303.00 | 887.00 |
| 7 | 320.00 | 976.50 |
| 8 | 354.15 | 1083.20 |
| 9 | 289.00 | 871.50 |
| 10 | 303.00 | 1060.50 |
| 11 | 352.00 | 918.00 |
| 12 | 310.00 | 940.00 |
| 13 | 337.50 | 929.50 |
| 14 | 257.00 | 1216.00 |
| 15 | 374.50 | 1166.50 |
| 16 | 246.50 | 1083.00 |
| 17 | 312.00 | 913.00 |
| 18 | 236.50 | 820.50 |
| 19 | 295.00 | 1210.00 |
| 20 | 239.50 | 1097.50 |
| 21 | 299.50 | 1107.50 |
| 22 | 244.50 | 815.00 |
| 23 | 255.50 | 892.00 |
| 24 | 345.00 | 1072.50 |
| 25 | 288.00 | 805.50 |
| 26 | 268.00 | 805.00 |
| 27 | 357.50 | 1045.00 |
| 28 | 361.50 | 932.00 |
| 29 | 342.50 | 913.50 |
| 30 | 306.00 | 929.00 |
| 31 | 220.50 | 1058.50 |
| 32 | 324.00 | 979.50 |
| 33 | 408.00 | 1083.50 |
| 34 | 414.50 | 1285.00 |
| 35 | 365.50 | 1087.00 |
| 36 | 291.00 | 822.00 |

| | BMCTrunkPreAverage |
|---|---|
| 1 | 797.00 |
| 2 | 901.00 |
| 3 | 991.70 |
| 4 | 787.00 |
| 5 | 803.50 |
| 6 | 754.50 |
| 7 | 898.50 |
| 8 | 865.40 |
| 9 | 948.50 |
| 10 | 896.50 |
| 11 | 801.00 |
| 12 | 828.00 |
| 13 | 855.50 |
| 14 | 884.00 |
| 15 | 1098.50 |
| 16 | 589.50 |
| 17 | 728.00 |
| 18 | 602.00 |
| 19 | 943.00 |
| 20 | 945.50 |
| 21 | 941.50 |
| 22 | 869.00 |
| 23 | 901.00 |
| 24 | 562.00 |
| 25 | 628.50 |
| 26 | 618.00 |
| 27 | 797.00 |
| 28 | 1000.00 |
| 29 | 940.50 |
| 30 | 925.00 |
| 31 | 817.50 |
| 32 | 796.50 |
| 33 | 1052.50 |
| 34 | 1108.50 |
| 35 | 969.00 |
| 36 | 733.50 |

| | ID | Code1young | Age | Height | Weight |
|---|---|---|---|---|---|
| 37 | LD47 | 1 | 22 | 168.5 | 57.9000 |
| 38 | LD48 | 1 | 23 | 179.0 | 92.4000 |

| | BMI | FatRegionTotal | FatArms | FatLegs |
|---|---|---|---|---|
| 37 | 20.4000 | 27.3000 | 23.0000 | 30.8000 |
| 38 | 28.8000 | 35.3000 | 33.5000 | 32.5000 |

| | FatTrunk | FatTotalg | FatArmsg | FatLegg |
|---|---|---|---|---|
| 37 | 27.8000 | 15672 | 1248 | 5956 |
| 38 | 39.9000 | 32510 | 3522 | 10025 |

DXA.sav

| | FatTrunkg | LeanTotalg | LeanArmsg | LeanLegsg |
|---|---|---|---|---|
| 37 | 7806 | 39146 | 3866 | 12377 |
| 38 | 18007 | 56036 | 6550 | 19475 |

| | LeanTrunkg | BMCtotalg | BMCArmsg | BMCLegsg |
|---|---|---|---|---|
| 37 | 19468 | 2637.0 | 304.0 | 996 |
| 38 | 25869 | 3538.0 | 438.0 | 1340 |

DXA.sav

| | BMCTrunkg | PRE2 | Weight_A | BMI_A | FatRegionTotal_A |
|---|---|---|---|---|---|
| 37 | 766.0 | . | 57.0000 | 20.1000 | 27.2000 |
| 38 | 1206.0 | . | 91.6000 | 28.9000 | 34.4000 |

DXA.sav

| | FatArms_A | FatLegs_A | FatTrunk_A | FatTotalg_A |
|---|---|---|---|---|
| 37 | 24.2000 | 30.7000 | 27.7000 | 15409 |
| 38 | 33.5000 | 31.6000 | 38.7000 | 31343 |

| | FatArmsg_A | FatLegg_A | FatTrunkg_A | LeanTotalg_A |
|---|---|---|---|---|
| 37 | 1311 | 5824 | 7619 | 38557 |
| 38 | 3446 | 9798 | 17257 | 56266 |

| | LeanArmsg_A | LeanLegsg_A | LeanTrunkg_A | BMCtotalg_A |
|---|---|---|---|---|
| 37 | 3805 | 12156 | 19127 | 2622.0 |
| 38 | 6403 | 19857 | 26176 | 3458.0 |

| | BMCArmsg_A | BMCLegsg_A | BMCTrunkg_A | POST | Weight_B |
|---|---|---|---|---|---|
| 37 | 309.0000 | 990.0000 | 761.0 | . | 58.8000 |
| 38 | 429.0000 | 1319.0000 | 1182.0 | . | 93.9000 |

DXA.sav

| | BMI_B | FatRegionTotal_B | FatArms_B | FatLegs_B |
|---|---|---|---|---|
| 37 | 20.7099 | 27.0000 | 24.2000 | 30.8000 |
| 38 | 29.3062 | 34.1000 | 32.4000 | 30.6000 |

DXA.sav

| | FatTrunk_B | FatTotalg_B | FatArmsg_B | FatLegg_B |
|---|---|---|---|---|
| 37 | 27.1000 | 15766 | 1410 | 5970 |
| 38 | 39.4000 | 31890 | 3463 | 10132 |

| | FatTrunkg_B | LeanTotalg_B | LeanArmsg_B | LeanLegsg_B |
|---|---|---|---|---|
| 37 | 7728 | 15766 | 4109 | 12451 |
| 38 | 17424 | 57950 | 6800 | 21665 |

DXA.sav

| | LeanTrunkg_B | BMCtotalg_B | BMCArmsg_B | BMCLegsg_B |
|---|---|---|---|---|
| 37 | 20039 | 2643 | 316 | 987 |
| 38 | 25566 | 3564 | 434 | 1335 |

| | BMCTrunkg_B | WeightPreAverage | PercentFatTotalPreAverage1 |
|---|---|---|---|
| 37 | 767 | 57.45 | 27.25 |
| 38 | 1259 | 92.00 | 34.85 |

DXA.sav

| | PercentFatArmsPreAverage1 | PercentFatLegsPreAverage1 |
|---|---|---|
| 37 | 23.60 | 30.75 |
| 38 | 33.50 | 32.05 |

| | PercentFatTrunkPreAverage | FatTotalPreAverage |
|---|---|---|
| 37 | 27.75 | 15540.50 |
| 38 | 39.30 | 31926.50 |

| | FatArmsPreAverage | FatLegsPreAverage |
|---|---|---|
| 37 | 1279.50 | 5890.00 |
| 38 | 3484.00 | 9911.50 |

| | FatTrunkPreAverage | LeanTotalPreAverage |
|---|---|---|
| 37 | 7712.50 | 38851.50 |
| 38 | 17632.00 | 56151.00 |

| | LeanArmsPreAverage | LeanLegsPreAverage |
|---|---|---|
| 37 | 3835.50 | 12266.50 |
| 38 | 6476.50 | 19666.00 |

| | LeanTrunkPreAverage | BMCTotalPreAverage |
|---|---|---|
| 37 | 19297.50 | 2629.50 |
| 38 | 26022.50 | 3498.00 |

DXA.sav

| | BMCArmsPreAverage | BMCLegsPreAverage |
|---|---|---|
| 37 | 306.50 | 993.00 |
| 38 | 433.50 | 1329.50 |

| | BMCTrunkPreAverage |
|---|---|
| 37 | 763.50 |
| 38 | 1194.00 |

## CSAs and Circumference

CSAs and Circumference.sav

| | ID | Code1young | @50CircPRE1 | MDCSA | HMRCSA | PRE2 | @50CircPRE2 |
|---|---|---|---|---|---|---|---|
| 1 | LD01 | 1 | 49.0 | 81 | 205 | . | 51.0 |
| 2 | LD02 | 1 | 53.5 | . | . | . | 53.5 |
| 3 | LD04 | 1 | . | . | . | . | 56.0 |
| 4 | LD05 | 1 | 51.0 | 40 | 213 | . | 53.5 |
| 5 | LD06 | 1 | 51.5 | . | . | . | 53.5 |
| 6 | LD08 | 1 | 54.0 | . | . | . | 55.0 |
| 7 | LD30 | 1 | 57.0 | 63 | 241 | . | 58.0 |
| 8 | LD10 | 1 | 59.5 | . | . | . | 61.0 |
| 9 | LD11 | 1 | 49.0 | 84 | 205 | . | 50.0 |
| 10 | LD12 | 1 | 53.0 | 74 | 223 | . | 51.0 |
| 11 | LD15 | 2 | 62.5 | 113 | 267 | . | 65.0 |
| 12 | LD16 | 2 | 63.0 | 79 | 269 | . | 61.0 |
| 13 | LD19 | 2 | 71.0 | 132 | 306 | . | 70.5 |
| 14 | LD20 | 2 | 57.0 | 67 | 241 | . | 59.0 |
| 15 | LD21 | 2 | 62.0 | 61 | 264 | . | 67.0 |
| 16 | LD23 | 2 | 61.0 | 87 | 259 | . | 67.0 |
| 17 | LD25 | 2 | 51.5 | 113 | 217 | . | 52.5 |
| 18 | LD26 | 2 | . | . | . | . | 53.5 |
| 19 | LD36 | 2 | 52.5 | 76 | 220 | . | 53.0 |
| 20 | LD38 | 2 | 60.0 | 88 | 255 | . | 60.5 |
| 21 | LD39 | 2 | 57.0 | 102 | 242 | . | 58.0 |
| 22 | LD40 | 2 | 53.5 | 95 | 225 | . | 59.5 |
| 23 | LD41 | 2 | 63.0 | 122 | 269 | . | 65.0 |
| 24 | LD42 | 2 | 52.5 | 76 | 221 | . | 51.5 |
| 25 | LD43 | 1 | 56.0 | 96 | 237 | . | 57.0 |
| 26 | LD44 | 1 | 58.0 | 122 | 246 | . | 58.0 |
| 27 | LD45 | 1 | 56.5 | 104 | 239 | . | 56.5 |
| 28 | LD46 | 1 | 47.5 | 71 | 197 | . | 51.0 |
| 29 | LD47 | 1 | 46.5 | 66 | 193 | . | 48.0 |
| 30 | LD48 | 1 | 59.0 | 149 | 252 | . | 62.5 |
| 31 | | . | . | . | . | . | . |
| 32 | | . | . | . | . | . | . |

CSAs and Circumference.sav

| | M | H S | WEEK 3 | @50Circ_B | MDCSA_D | HMRCSA_D |
|---|---|---|---|---|---|---|
| 1 | . | . | . | 55.5 | 0 | . |
| 2 | 93 | 214 | . | 51.5 | 0 | . |
| 3 | 73 | 234 | . | 58.5 | 84 | 248 |
| 4 | 68 | 220 | . | 52.0 | 57 | 218 |
| 5 | . | 225 | . | 55.5 | . | 234 |
| 6 | 60 | 229 | . | 56.5 | 85 | 239 |
| 7 | 90 | 246 | . | 58.0 | 65 | 245 |
| 8 | 0 | 253 | . | 58.5 | 88 | 248 |
| 9 | 78 | 209 | . | 50.0 | 76 | 209 |
| 10 | 75 | 214 | . | 52.0 | 79 | 218 |
| 11 | 149 | 269 | . | 63.0 | 104 | 269 |
| 12 | 112 | 285 | . | 64.5 | 127 | 276 |
| 13 | 141 | 299 | . | 70.5 | 106 | 304 |
| 14 | 101 | 242 | . | 57.5 | 88 | 243 |
| 15 | 107 | 239 | . | 64.5 | 113 | 276 |
| 16 | 107 | 273 | . | 63.5 | 106 | 271 |
| 17 | 112 | 219 | . | 54.0 | 123 | 228 |
| 18 | 57 | 229 | . | 54.5 | 74 | 229 |
| 19 | 100 | 223 | . | 54.5 | 106 | 230 |
| 20 | 95 | 241 | . | 59.5 | 114 | 253 |
| 21 | 103 | 246 | . | 59.0 | 122 | 251 |
| 22 | 142 | 252 | . | 57.0 | 130 | 242 |
| 23 | 120 | 274 | . | 64.0 | 131 | 274 |
| 24 | 94 | 230 | . | 52.0 | 81 | 218 |
| 25 | 123 | 249 | . | 57.5 | 129 | 244 |
| 26 | 112 | 244 | . | 61.0 | 132 | 260 |
| 27 | 0 | 0 | . | 56.0 | 106 | 237 |
| 28 | 83 | 218 | . | 52.5 | 97 | 221 |
| 29 | 71 | 202 | . | 49.5 | 83 | 207 |
| 30 | 14 | 259 | . | 60.5 | 164 | 259 |
| 31 | . | . | . | . | . | . |
| 32 | . | . | . | . | . | . |

| | WEEK4 | @50Circ_C | MDCSA_E | HMRCSA_E | WEEK5 |
|---|---|---|---|---|---|
| 1 | . | 56.5 | 0 | . | . |
| 2 | . | 51.5 | 81 | 216 | . |
| 3 | . | 56.5 | 77 | 239 | . |
| 4 | . | 51.5 | 78 | 216 | . |
| 5 | . | 56.5 | . | 239 | . |
| 6 | . | 56.0 | 89 | 237 | . |
| 7 | . | 59.5 | 83 | 253 | . |
| 8 | . | 57.5 | 90 | 244 | . |
| 9 | . | 50.0 | 80 | 209 | . |
| 10 | . | 51.5 | 80 | 216 | . |
| 11 | . | 64.5 | 106 | 276 | . |
| 12 | . | 65.0 | 100 | 278 | . |
| 13 | . | 69.5 | 123 | 300 | . |
| 14 | . | 56.5 | 97 | 239 | . |
| 15 | . | 65.5 | 117 | 281 | . |
| 16 | . | 62.0 | 109 | 264 | . |
| 17 | . | 53.0 | 110 | 223 | . |
| 18 | . | 54.5 | 100 | 230 | . |
| 19 | . | 54.5 | 107 | 230 | . |
| 20 | . | 57.5 | 113 | 244 | . |
| 21 | . | 58.0 | 114 | 246 | . |
| 22 | . | 58.0 | 131 | 246 | . |
| 23 | . | 64.0 | 139 | 274 | . |
| 24 | . | 53.0 | 90 | 223 | . |
| 25 | . | 58.0 | 114 | 246 | . |
| 26 | . | 58.0 | 135 | 247 | . |
| 27 | . | 57.0 | 114 | 241 | . |
| 28 | . | 51.5 | 90 | 216 | . |
| 29 | . | 49.0 | 86 | 205 | . |
| 30 | . | 59.5 | 154 | 254 | . |
| 31 | . | . | . | . | . |
| 32 | . | . | . | . | . |

CSAs and Circumference.sav

| | @50Circ_D | MDCSA_F | HMRCSA_F | WEEK6 | @50Circ_E |
|---|---|---|---|---|---|
| 1 | 57.0 | 91 | 241 | . | 56.5 |
| 2 | 51.5 | 88 | 216 | . | 52.0 |
| 3 | 56.0 | 85 | 237 | . | 59.5 |
| 4 | 52.5 | 81 | 221 | . | 51.0 |
| 5 | 57.0 | 91 | 241 | . | 56.5 |
| 6 | 55.5 | 84 | 234 | . | 56.0 |
| 7 | 59.0 | 81 | 250 | . | 58.0 |
| 8 | 58.0 | 83 | 246 | . | 59.0 |
| 9 | 50.5 | 74 | 211 | . | 50.5 |
| 10 | 51.5 | 73 | 216 | . | 52.5 |
| 11 | 64.5 | 106 | 276 | . | 63.5 |
| 12 | 63.0 | 105 | 269 | . | 63.5 |
| 13 | 70.5 | 128 | 304 | . | 69.5 |
| 14 | 57.5 | 97 | 244 | . | 57.0 |
| 15 | 66.5 | 149 | 286 | . | 65.0 |
| 16 | 63.0 | 132 | 269 | . | 62.0 |
| 17 | 53.5 | 117 | 226 | . | 52.5 |
| 18 | 54.0 | 86 | 227 | . | 53.0 |
| 19 | 52.5 | 100 | 221 | . | 54.0 |
| 20 | 57.5 | 113 | 244 | . | 56.0 |
| 21 | 59.0 | 133 | 251 | . | 59.5 |
| 22 | 58.5 | 157 | 249 | . | . |
| 23 | 63.5 | 118 | 272 | . | 64.0 |
| 24 | 51.0 | 80 | 214 | . | 52.0 |
| 25 | 57.5 | 102 | 243 | . | 56.0 |
| 26 | 59.5 | 141 | 254 | . | 58.0 |
| 27 | 57.0 | 122 | 242 | . | 55.5 |
| 28 | 52.0 | 86 | 219 | . | 51.5 |
| 29 | 49.5 | 81 | 207 | . | 48.5 |
| 30 | 61.0 | 164 | 261 | . | 59.5 |
| 31 | . | . | . | . | . |
| 32 | . | . | . | . | . |

CSAs and Circumference.sav

| | MDCSA_G | HMRCSA_G | WEEK7 | @50Circ_F | MDCSA_H |
|---|---|---|---|---|---|
| 1 | 0 | . | . | 56.5 | 66 |
| 2 | 83 | 218 | . | 54.0 | 78 |
| 3 | 92 | 253 | . | 56.0 | 62 |
| 4 | 68 | 213 | . | 51.5 | 69 |
| 5 | . | 239 | . | 56.5 | 66 |
| 6 | 77 | 236 | . | 56.5 | 68 |
| 7 | 98 | 246 | . | 59.5 | 80 |
| 8 | 82 | 251 | . | 58.0 | 70 |
| 9 | 81 | 212 | . | 50.5 | 60 |
| 10 | 75 | 221 | . | 52.0 | 74 |
| 11 | 107 | 271 | . | 64.0 | 103 |
| 12 | 91 | 271 | . | 64.0 | 105 |
| 13 | 123 | 299 | . | 70.5 | 120 |
| 14 | 77 | 241 | . | 57.0 | 84 |
| 15 | 106 | 278 | . | 65.5 | 106 |
| 16 | 117 | 264 | . | 64.5 | 121 |
| 17 | 107 | 221 | . | 52.5 | 94 |
| 18 | 77 | 222 | . | . | 45 |
| 19 | 97 | 227 | . | 55.0 | 124 |
| 20 | 89 | 237 | . | 57.5 | 101 |
| 21 | 124 | 253 | . | 57.5 | 135 |
| 22 | 0 | -23 | . | . | 0 |
| 23 | 123 | 274 | . | 63.5 | 97 |
| 24 | 104 | 218 | . | 53.5 | 103 |
| 25 | 123 | 237 | . | 56.5 | 110 |
| 26 | 128 | 247 | . | 57.0 | 112 |
| 27 | 115 | 235 | . | 58.5 | 134 |
| 28 | 106 | 216 | . | 52.0 | 92 |
| 29 | 81 | 202 | . | 47.0 | 61 |
| 30 | 184 | 254 | . | 59.5 | 152 |
| 31 | . | . | . | . | . |
| 32 | . | . | . | . | . |

CSAs and Circumference.sav

| | MDCSA_G | HMRCSA_G | WEEK7 | @50Circ_F | MDCSA_H |
|---|---|---|---|---|---|
| 1 | 0 | . | . | 56.5 | 66 |
| 2 | 83 | 218 | . | 54.0 | 78 |
| 3 | 92 | 253 | . | 56.0 | 62 |
| 4 | 68 | 213 | . | 51.5 | 69 |
| 5 | . | 239 | . | 56.5 | 66 |
| 6 | 77 | 236 | . | 56.5 | 68 |
| 7 | 98 | 246 | . | 59.5 | 80 |
| 8 | 82 | 251 | . | 58.0 | 70 |
| 9 | 81 | 212 | . | 50.5 | 60 |
| 10 | 75 | 221 | . | 52.0 | 74 |
| 11 | 107 | 271 | . | 64.0 | 103 |
| 12 | 91 | 271 | . | 64.0 | 105 |
| 13 | 123 | 299 | . | 70.5 | 120 |
| 14 | 77 | 241 | . | 57.0 | 84 |
| 15 | 106 | 278 | . | 65.5 | 106 |
| 16 | 117 | 264 | . | 64.5 | 121 |
| 17 | 107 | 221 | . | 52.5 | 94 |
| 18 | 77 | 222 | . | . | 45 |
| 19 | 97 | 227 | . | 55.0 | 124 |
| 20 | 89 | 237 | . | 57.5 | 101 |
| 21 | 124 | 253 | . | 57.5 | 135 |
| 22 | 0 | -23 | . | . | 0 |
| 23 | 123 | 274 | . | 63.5 | 97 |
| 24 | 104 | 218 | . | 53.5 | 103 |
| 25 | 123 | 237 | . | 56.5 | 110 |
| 26 | 128 | 247 | . | 57.0 | 112 |
| 27 | 115 | 235 | . | 58.5 | 134 |
| 28 | 106 | 216 | . | 52.0 | 92 |
| 29 | 81 | 202 | . | 47.0 | 61 |
| 30 | 184 | 254 | . | 59.5 | 152 |
| 31 | . | . | . | . | . |
| 32 | . | . | . | . | . |

CSAs and Circumference.sav

| | HMRCSA_H | WEEK8 | @50Circ_G | MDCSA_I | HMRCSA_I |
|---|---|---|---|---|---|
| 1 | 239 | . | 58.5 | . | . |
| 2 | 227 | . | 53.0 | 78 | 223 |
| 3 | 236 | . | 59.0 | 95 | 251 |
| 4 | 215 | . | 52.5 | 70 | 220 |
| 5 | 239 | . | 58.5 | . | 248 |
| 6 | 239 | . | 57.0 | 92 | 241 |
| 7 | 253 | . | 58.0 | 93 | 246 |
| 8 | 246 | . | 58.0 | 85 | 246 |
| 9 | 211 | . | 49.5 | 73 | 207 |
| 10 | 218 | . | 52.0 | 82 | 218 |
| 11 | 274 | . | 64.0 | 105 | 274 |
| 12 | 274 | . | 62.5 | 114 | 267 |
| 13 | 304 | . | 69.5 | 124 | 299 |
| 14 | 241 | . | 58.0 | 104 | 246 |
| 15 | 281 | . | 66.0 | 133 | 283 |
| 16 | 276 | . | 64.5 | 155 | 276 |
| 17 | 221 | . | 52.0 | 85 | 219 |
| 18 | -25 | . | 54.0 | 82 | 227 |
| 19 | 232 | . | 54.0 | 116 | 228 |
| 20 | 243 | . | 58.0 | 93 | 246 |
| 21 | 244 | . | 57.5 | 119 | 244 |
| 22 | -23 | . | . | . | . |
| 23 | 271 | . | 64.0 | 122 | 274 |
| 24 | 225 | . | 53.5 | 103 | 225 |
| 25 | 239 | . | 60.0 | 146 | 256 |
| 26 | 242 | . | 58.0 | 128 | 247 |
| 27 | 249 | . | 57.5 | 135 | 244 |
| 28 | 219 | . | 53.0 | 106 | 223 |
| 29 | 195 | . | 48.0 | 84 | 200 |
| 30 | 254 | . | 61.5 | 173 | 263 |
| 31 | . | . | . | . | . |
| 32 | . | . | . | . | . |

| | POST | @50Circ_H | MDCSA_J | HMRCSA_J |
|---|---|---|---|---|
| 1 | . | 50.5 | 78 | 211 |
| 2 | . | 54.0 | 85 | 227 |
| 3 | . | 58.0 | 111 | 246 |
| 4 | . | 51.0 | 59 | 213 |
| 5 | . | 57.0 | . | 242 |
| 6 | . | 58.5 | 83 | 248 |
| 7 | . | 58.0 | 81 | 245 |
| 8 | . | 58.5 | 99 | 248 |
| 9 | . | 49.5 | 78 | 207 |
| 10 | . | 51.5 | 100 | 217 |
| 11 | . | 64.0 | 122 | 274 |
| 12 | . | 62.5 | 103 | 266 |
| 13 | . | 68.0 | 122 | 292 |
| 14 | . | 57.0 | 116 | 241 |
| 15 | . | 66.5 | 121 | 285 |
| 16 | . | 63.0 | 141 | 269 |
| 17 | . | 51.0 | 94 | 214 |
| 18 | . | 53.0 | 72 | 223 |
| 19 | . | 53.0 | 93 | 223 |
| 20 | . | 59.0 | 111 | 250 |
| 21 | . | 57.0 | 108 | 242 |
| 22 | . | . | . | . |
| 23 | . | 63.0 | 124 | 269 |
| 24 | . | 50.0 | 80 | 209 |
| 25 | . | 59.0 | 134 | 251 |
| 26 | . | 57.0 | 142 | 242 |
| 27 | . | 55.0 | 104 | 232 |
| 28 | . | 53.0 | 107 | 224 |
| 29 | . | 47.0 | 78 | 195 |
| 30 | . | 62.5 | 201 | 268 |
| 31 | . | . | . | . |
| 32 | | | | |

| | CircumferencePreAVERAGE | MDPreAVERAGE | MHRPreAVERAGE |
|---|---|---|---|
| 1 | 52.50 | 96.49 | 213.91 |
| 2 | 53.00 | 85.43 | 225.48 |
| 3 | 55.50 | 72.16 | 234.17 |
| 4 | 52.75 | 78.11 | 221.88 |
| 5 | 53.75 | . | 225.79 |
| 6 | 54.50 | 71.51 | 229.59 |
| 7 | 58.00 | 75.21 | 245.63 |
| 8 | 60.00 | 99.55 | 255.07 |
| 9 | 49.75 | 94.15 | 208.43 |
| 10 | 51.50 | 70.05 | 216.28 |
| 11 | 63.00 | 138.20 | 269.46 |
| 12 | 62.00 | 86.64 | 263.93 |
| 13 | 71.00 | 115.06 | 306.07 |
| 14 | 58.25 | 97.95 | 246.78 |
| 15 | 66.25 | 105.26 | 284.08 |
| 16 | 66.30 | 107.19 | 284.28 |
| 17 | 52.25 | 119.92 | 220.10 |
| 18 | 54.75 | 71.31 | 230.47 |
| 19 | 53.25 | 104.09 | 224.44 |
| 20 | 60.00 | 123.27 | 255.52 |
| 21 | 58.50 | 125.30 | 248.88 |
| 22 | 59.50 | 138.95 | 253.79 |
| 23 | 64.25 | 134.30 | 275.22 |
| 24 | 51.75 | 85.36 | 216.84 |
| 25 | 58.25 | 115.35 | 247.36 |
| 26 | 58.50 | 111.24 | 248.47 |
| 27 | 57.25 | 122.85 | 242.81 |
| 28 | 51.25 | 86.10 | 214.86 |
| 29 | 48.00 | 73.96 | 199.68 |
| 30 | 61.75 | 171.67 | 264.32 |
| 31 | . | . | . |
| 32 | . | . | . |

**Functional**

| | ID | Code1young | PRE1 | TotalScor… | AverageScoreLower | TotalScoreonUpperBodyPRE1 |
|---|---|---|---|---|---|---|
| 1 | . | 1 | . | 78 | 4 | 40 |
| 2 | . | 1 | . | . | 4 | . |
| 3 | . | 1 | . | 77 | 4 | 39 |
| 4 | . | 1 | . | . | 3 | . |
| 5 | . | 1 | . | 76 | 4 | 42 |
| 6 | . | 1 | . | 80 | 4 | 42 |
| 7 | . | 1 | . | 79 | 4 | 42 |
| 8 | . | 1 | . | 75 | 4 | 37 |
| 9 | . | 1 | . | 76 | 4 | 39 |
| 10 | . | 1 | . | 65 | 3 | 42 |
| 11 | . | 1 | . | 77 | 4 | 40 |
| 12 | . | 1 | . | 80 | 4 | 42 |
| 13 | . | 1 | . | 79 | 4 | 42 |
| 14 | . | 2 | . | 78 | 4 | 40 |
| 15 | . | 2 | . | 74 | 4 | 41 |
| 16 | . | 2 | . | 62 | 3 | 36 |
| 17 | . | 2 | . | 63 | 3 | 40 |
| 18 | . | 2 | . | 47 | 2 | 38 |
| 19 | . | 2 | . | 64 | 3 | 40 |
| 20 | . | 2 | . | 75 | 4 | 39 |
| 21 | . | 2 | . | 66 | 3 | 40 |
| 22 | . | 2 | . | 63 | 3 | 34 |
| 23 | . | 2 | . | 76 | 4 | 41 |
| 24 | . | 2 | . | 75 | 4 | 39 |
| 25 | . | 2 | . | 78 | 4 | 42 |
| 26 | . | 2 | . | . | 4 | . |
| 27 | . | 2 | . | 59 | 3 | 37 |
| 28 | . | 2 | . | 69 | 3 | 36 |
| 29 | . | 2 | . | 80 | 4 | 42 |
| 30 | . | 2 | . | 69 | 3 | 38 |
| 31 | . | 2 | . | 59 | 3 | 38 |
| 32 | . | 2 | . | 77 | 4 | 42 |
| 33 | . | 1 | . | 76 | 4 | 42 |
| 34 | . | 1 | . | 80 | 4 | 42 |

| | AverageScoreUpper | PRE2 | TotalScoreonLowerBodyPRE2 | AverageScoreLower_A | TotalScoreonUpperBodyPRE2 |
|---|---|---|---|---|---|
| 1 | 3 | . | 79 | 4 | 42 |
| 2 | 3 | . | 80 | 4 | 42 |
| 3 | 3 | . | . | 4 | . |
| 4 | 3 | . | 65 | 3 | 39 |
| 5 | 3 | . | 78 | 4 | 42 |
| 6 | 3 | . | 80 | 4 | 42 |
| 7 | 3 | . | . | 4 | . |
| 8 | 3 | . | 75 | 4 | 39 |
| 9 | 3 | . | 78 | 4 | 41 |
| 10 | 3 | . | 70 | 4 | 41 |
| 11 | 3 | . | 77 | 4 | 40 |
| 12 | 3 | . | 80 | 4 | 42 |
| 13 | 3 | . | 79 | 4 | 41 |
| 14 | 3 | . | . | 4 | . |
| 15 | 3 | . | 79 | 4 | 42 |
| 16 | 3 | . | 63 | 3 | 35 |
| 17 | 3 | . | . | 3 | . |
| 18 | 3 | . | 45 | 2 | 36 |
| 19 | 3 | . | 67 | 3 | 41 |
| 20 | 3 | . | 78 | 4 | 42 |
| 21 | 3 | . | 66 | 3 | 40 |
| 22 | 2 | . | 71 | 4 | 41 |
| 23 | 3 | . | 80 | 4 | 42 |
| 24 | 3 | . | 80 | 4 | 42 |
| 25 | 3 | . | 79 | 4 | 41 |
| 26 | 3 | . | 75 | 4 | 40 |
| 27 | 3 | . | 60 | 3 | 37 |
| 28 | 3 | . | 68 | 3 | 37 |
| 29 | 3 | . | 80 | 4 | 42 |
| 30 | 3 | . | 73 | 4 | 39 |
| 31 | 3 | . | 70 | 4 | 42 |
| 32 | 3 | . | 76 | 4 | 41 |
| 33 | 3 | . | 75 | 4 | 40 |
| 34 | 3 | . | 80 | 4 | 42 |

Functional.sav

| | AverageScoreUpper_A | POST | TotalScoreonLowerBodyPOST | AverageScoreLower_B | TotalScoreonUpperBodyPOST |
|---|---|---|---|---|---|
| 1 | 3 | . | 79 | 4 | 42 |
| 2 | 3 | . | 80 | 4 | 42 |
| 3 | 3 | . | . | . | . |
| 4 | 3 | . | 74 | 4 | 42 |
| 5 | 3 | . | 77 | 4 | 42 |
| 6 | 3 | . | 80 | 4 | 42 |
| 7 | 3 | . | . | . | . |
| 8 | 3 | . | 74 | 4 | 42 |
| 9 | 3 | . | 80 | 4 | 42 |
| 10 | 3 | . | 70 | 4 | 42 |
| 11 | 3 | . | 78 | 4 | 42 |
| 12 | 3 | . | 80 | 4 | 42 |
| 13 | 3 | . | . | . | . |
| 14 | 3 | . | . | . | . |
| 15 | 3 | . | 80 | 4 | 42 |
| 16 | 3 | . | 74 | 4 | 42 |
| 17 | 3 | . | . | . | . |
| 18 | 3 | . | . | . | . |
| 19 | 3 | . | 69 | 3 | 42 |
| 20 | 3 | . | 78 | 4 | 42 |
| 21 | 3 | . | 68 | 3 | 40 |
| 22 | 3 | . | . | . | . |
| 23 | 3 | . | 80 | 4 | 42 |
| 24 | 3 | . | . | . | . |
| 25 | 3 | . | 79 | 4 | 42 |
| 26 | 3 | . | 80 | 4 | 42 |
| 27 | 3 | . | 68 | 3 | 37 |
| 28 | 3 | . | 70 | 4 | 39 |
| 29 | 3 | . | 80 | 4 | 42 |
| 30 | 3 | . | . | . | . |
| 31 | 3 | . | 70 | 4 | 41 |
| 32 | 3 | . | 80 | 4 | 42 |
| 33 | 3 | . | 78 | 4 | 42 |
| 34 | 3 | . | 80 | 4 | 42 |

| | AverageScoreUpper_B | LowerPreAverage | UpperPreAverage |
|---|---|---|---|
| 1 | 3 | 3.93 | 2.93 |
| 2 | 3 | 4.00 | 3.00 |
| 3 | . | 3.85 | 2.79 |
| 4 | 3 | 3.25 | 2.79 |
| 5 | 3 | 3.85 | 3.00 |
| 6 | 3 | 4.00 | 3.00 |
| 7 | . | 3.95 | 3.00 |
| 8 | 3 | 3.75 | 2.71 |
| 9 | 3 | 3.85 | 2.86 |
| 10 | 3 | 3.38 | 2.96 |
| 11 | 3 | 3.85 | 2.86 |
| 12 | 3 | 4.00 | 3.00 |
| 13 | . | 3.95 | 2.96 |
| 14 | . | 3.90 | 2.86 |
| 15 | 3 | 3.83 | 2.96 |
| 16 | 3 | 3.13 | 2.54 |
| 17 | . | 3.15 | 2.86 |
| 18 | . | 2.30 | 2.57 |
| 19 | 3 | 3.28 | 2.89 |
| 20 | 3 | 3.83 | 2.89 |
| 21 | 3 | 3.30 | 2.86 |
| 22 | . | 3.35 | 2.68 |
| 23 | 3 | 3.90 | 2.96 |
| 24 | . | 3.88 | 2.89 |
| 25 | 3 | 3.93 | 2.96 |
| 26 | 3 | 3.75 | 2.86 |
| 27 | 3 | 2.98 | 2.64 |
| 28 | 3 | 3.43 | 2.61 |
| 29 | 3 | 4.00 | 3.00 |
| 30 | . | 3.55 | 2.75 |
| 31 | 3 | 3.23 | 2.86 |
| 32 | 3 | 3.83 | 2.96 |
| 33 | 3 | 3.78 | 2.93 |
| 34 | 3 | 4.00 | 3.00 |

| | ID | Code1young | PRE1 | TotalScor... | AverageScoreLower | TotalScoreonUpperBodyPRE1 |
|---|---|---|---|---|---|---|
| 35 | . | 1 | . | 76 | 4 | 42 |
| 36 | . | 1 | . | 72 | 4 | 39 |
| 37 | . | 1 | . | 80 | 4 | 42 |
| 38 | . | 1 | . | 76 | 4 | 41 |
| 39 | . | . | . | . | . | . |
| 40 | . | . | . | . | . | . |

| | AverageScoreUpper | PRE2 | TotalScoreonLowerBodyPRE2 | AverageScoreLower_A | TotalScoreonUpperBodyPRE2 |
|---|---|---|---|---|---|
| 35 | 3 | . | 80 | 4 | 41 |
| 36 | 3 | . | 76 | 4 | 37 |
| 37 | 3 | . | 80 | 4 | 42 |
| 38 | 3 | . | 76 | 4 | 41 |
| 39 | . | . | . | . | . |
| 40 | . | . | . | . | . |

Functional.sav

| | AverageScoreUpper_A | POST | TotalScoreonLowerBodyPOST | AverageScoreLower_B | TotalScoreonUpperBodyPOST |
|---|---|---|---|---|---|
| 35 | 3 | . | 80 | 4 | 42 |
| 36 | 3 | . | 79 | 4 | 40 |
| 37 | 3 | . | 80 | 4 | 42 |
| 38 | 3 | . | 79 | 4 | 42 |
| 39 | . | . | . | . | . |
| 40 | . | . | . | . | . |

Functional.sav

| | AverageScoreUpper_B | LowerPreAverage | UpperPreAverage |
|---|---|---|---|
| 35 | 3 | 3.90 | 2.96 |
| 36 | 3 | 3.70 | 2.71 |
| 37 | 3 | 4.00 | 3.00 |
| 38 | 3 | 3.80 | 2.93 |
| 39 | . | . | . |
| 40 | . | . | . |

**Strength**

Strength.sav

| | ID | Code1young | LegPressPre1 | ChestPressPre1 |
|---|---|---|---|---|
| 1 | LD01 | 1 | 190 | 45 |
| 2 | LD02 | 1 | 230 | 75 |
| 3 | LD03 | 1 | 230 | 85 |
| 4 | LD04 | 1 | 200 | 45 |
| 5 | LD05 | 1 | 230 | 45 |
| 6 | LD06 | 1 | 210 | 55 |
| 7 | LD07 | 1 | 113 | 75 |
| 8 | LD08 | 1 | 210 | 70 |
| 9 | LD30 | 1 | 250 | 60 |
| 10 | LD10 | 1 | 190 | 60 |
| 11 | LD11 | 1 | 190 | 75 |
| 12 | LD12 | 1 | 160 | 55 |
| 13 | LD13 | 1 | 310 | 90 |
| 14 | LD14 | 2 | 200 | 60 |
| 15 | LD15 | 2 | 180 | 45 |
| 16 | LD16 | 2 | 190 | 40 |
| 17 | LD17 | 2 | 210 | 60 |
| 18 | LD18 | 2 | 120 | 45 |
| 19 | LD19 | 2 | 210 | 60 |
| 20 | LD20 | 2 | 190 | 70 |
| 21 | LD21 | 2 | 170 | 70 |
| 22 | LD22 | 2 | 170 | 45 |
| 23 | LD23 | 2 | 190 | 75 |
| 24 | LD25 | 2 | 180 | 60 |
| 25 | LD26 | 2 | 150 | 45 |
| 26 | | . | . | . |
| 27 | LD36 | 2 | 140 | 45 |
| 28 | LD38 | 2 | 130 | 30 |
| 29 | LD39 | 2 | 170 | 60 |
| 30 | LD40 | 2 | 140 | 30 |
| 31 | LD41 | 2 | 170 | 55 |
| 32 | LD42 | 2 | 130 | 55 |
| 33 | LD43 | 1 | 240 | 60 |
| 34 | LD44 | 1 | 250 | 60 |
| 35 | LD45 | 1 | 250 | 85 |

Strength.sav

| | LegCurlPre1 |
|---|---|
| 1 | 113 |
| 2 | 94 |
| 3 | 131 |
| 4 | 94 |
| 5 | 75 |
| 6 | 113 |
| 7 | 113 |
| 8 | 138 |
| 9 | 100 |
| 10 | 88 |
| 11 | 94 |
| 12 | 100 |
| 13 | 138 |
| 14 | 107 |
| 15 | 94 |
| 16 | 100 |
| 17 | 94 |
| 18 | 63 |
| 19 | 100 |
| 20 | 107 |
| 21 | 113 |
| 22 | 63 |
| 23 | 69 |
| 24 | 100 |
| 25 | 88 |
| 26 | . |
| 27 | 82 |
| 28 | 55 |
| 29 | 92 |
| 30 | 69 |
| 31 | 88 |
| 32 | 88 |
| 33 | 125 |
| 34 | 144 |
| 35 | 132 |

| | ShoulderPressPre1 | LegExtensionPre1 | LatPullDownPre1 | PRE2 | LegPressPre2 |
|---|---|---|---|---|---|
| 1 | 45 | 69 | 75 | . | 160 |
| 2 | 58 | 107 | 88 | . | 230 |
| 3 | . | 157 | 894 | . | 230 |
| 4 | 45 | 107 | 107 | . | 200 |
| 5 | 36 | 107 | 75 | . | 260 |
| 6 | 45 | 113 | 88 | . | 210 |
| 7 | 62 | 113 | 107 | . | 113 |
| 8 | 58 | 125 | 82 | . | 220 |
| 9 | 50 | 113 | 88 | . | 240 |
| 10 | 50 | 113 | 88 | . | 200 |
| 11 | 50 | 125 | 82 | . | 190 |
| 12 | 36 | 100 | 75 | . | 190 |
| 13 | 62 | 144 | 119 | . | 340 |
| 14 | 32 | 138 | 94 | . | 200 |
| 15 | 32 | 113 | 82 | . | 190 |
| 16 | 36 | 94 | 82 | . | 180 |
| 17 | 50 | 88 | 82 | . | 210 |
| 18 | 27 | 69 | 69 | . | 140 |
| 19 | 32 | 113 | 82 | . | 210 |
| 20 | 50 | 113 | 94 | . | 160 |
| 21 | 45 | 100 | 94 | . | 140 |
| 22 | 27 | 63 | 69 | . | 150 |
| 23 | 62 | 69 | 94 | . | 270 |
| 24 | 50 | 100 | 75 | . | 180 |
| 25 | 63 | 63 | 69 | . | 150 |
| 26 | . | . | . | . | . |
| 27 | 36 | 100 | 69 | . | 150 |
| 28 | 23 | 69 | 57 | . | 120 |
| 29 | 50 | 82 | 75 | . | 190 |
| 30 | 32 | 75 | 75 | . | 140 |
| 31 | 27 | 57 | 63 | . | 170 |
| 32 | 36 | 88 | 75 | . | 150 |
| 33 | 41 | 138 | 88 | . | 250 |
| 34 | 50 | 132 | 88 | . | 230 |
| 35 | 59 | 150 | 100 | . | 230 |

Strength.sav

| | ChestPressPre2 | LegCurlPre2 | ShoulderPressPre2 | LegExtensionPre2 |
|---|---|---|---|---|
| 1 | 60 | 113 | 45 | 113 |
| 2 | 75 | 94 | 58 | 107 |
| 3 | 85 | 131 | . | 157 |
| 4 | 45 | 94 | 45 | 107 |
| 5 | 45 | 113 | 36 | 119 |
| 6 | 55 | 119 | 41 | 100 |
| 7 | 75 | 113 | 62 | 113 |
| 8 | 75 | 125 | 41 | 125 |
| 9 | 75 | 119 | 50 | 94 |
| 10 | 60 | 94 | 50 | 113 |
| 11 | 70 | 107 | 50 | 125 |
| 12 | 55 | 100 | 45 | 88 |
| 13 | 90 | 125 | 62 | 144 |
| 14 | 60 | 107 | 32 | 138 |
| 15 | 55 | 100 | 41 | 119 |
| 16 | 45 | 107 | 45 | 88 |
| 17 | 60 | 94 | 50 | 88 |
| 18 | 45 | 69 | 32 | 69 |
| 19 | 55 | 107 | 32 | 113 |
| 20 | 60 | 113 | 50 | 113 |
| 21 | 55 | 107 | 45 | 100 |
| 22 | 55 | 88 | 32 | 69 |
| 23 | 75 | 69 | 58 | 75 |
| 24 | 71 | 100 | 50 | 100 |
| 25 | 45 | 88 | 63 | 63 |
| 26 | . | . | . | . |
| 27 | 45 | 82 | 41 | 94 |
| 28 | 30 | 69 | 23 | 88 |
| 29 | 60 | 100 | 50 | 88 |
| 30 | 30 | 63 | 27 | 75 |
| 31 | 60 | 82 | 41 | 75 |
| 32 | 45 | 82 | 41 | 94 |
| 33 | 75 | 132 | 54 | 157 |
| 34 | 71 | 125 | 54 | 132 |

Strength.sav

| | LatPullDownPre2 | WEEK2 | LegPressWeek2 | ChestPressWeek2 | LegCurlWeek2 |
|---|---|---|---|---|---|
| 1 | 82 | . | 200 | 60 | 144 |
| 2 | 88 | . | 280 | 92 | 119 |
| 3 | 894 | . | . | . | . |
| 4 | 107 | . | 190 | 60 | 113 |
| 5 | 88 | . | 280 | 55 | 107 |
| 6 | 88 | . | 240 | 55 | 107 |
| 7 | 107 | . | . | . | . |
| 8 | 82 | . | 230 | 60 | 138 |
| 9 | 82 | . | 220 | 70 | 113 |
| 10 | 88 | . | 210 | 60 | 100 |
| 11 | 88 | . | 200 | 45 | 119 |
| 12 | 75 | . | 180 | 45 | 100 |
| 13 | 113 | . | . | . | . |
| 14 | 94 | . | . | . | . |
| 15 | 82 | . | 240 | 45 | 107 |
| 16 | 75 | . | 220 | 55 | 100 |
| 17 | 82 | . | . | . | . |
| 18 | 69 | . | . | . | . |
| 19 | 94 | . | 230 | 60 | 132 |
| 20 | 88 | . | 200 | 60 | 107 |
| 21 | 88 | . | 180 | 60 | 119 |
| 22 | 69 | . | . | . | . |
| 23 | 94 | . | 270 | 75 | 125 |
| 24 | 88 | . | 190 | 45 | 107 |
| 25 | 69 | . | 150 | 55 | 88 |
| 26 | . | . | . | . | . |
| 27 | 82 | . | 170 | 45 | 100 |
| 28 | 63 | . | 140 | 30 | 69 |
| 29 | 82 | . | 170 | 60 | 100 |
| 30 | 69 | . | 150 | 30 | 75 |
| 31 | 82 | . | 160 | 55 | 107 |
| 32 | 94 | . | 150 | 45 | 94 |
| 33 | 94 | . | 230 | 75 | 125 |
| 34 | 88 | . | 270 | 60 | 150 |
| 35 | 107 | . | 210 | 75 | 132 |

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Strength.sav

| | ShoulderPressWeek2 | LegExtensionWeek2 | LatPullDownWeek2 | WEEK4 | LegPressWeek4 |
|---|---|---|---|---|---|
| 1 | 41 | 132 | 69 | . | 210 |
| 2 | 50 | 113 | 88 | . | 220 |
| 3 | . | . | . | . | . |
| 4 | 50 | 113 | 100 | . | 210 |
| 5 | 41 | 125 | 75 | . | 310 |
| 6 | 45 | 125 | 82 | . | 230 |
| 7 | . | . | . | . | . |
| 8 | 50 | 144 | 88 | . | 230 |
| 9 | 50 | 113 | 82 | . | 230 |
| 10 | 50 | 107 | 88 | . | 210 |
| 11 | 50 | 144 | 94 | . | 220 |
| 12 | 50 | 119 | 75 | . | 200 |
| 13 | . | . | . | . | . |
| 14 | . | . | . | . | . |
| 15 | 38 | 125 | 82 | . | 200 |
| 16 | 45 | 107 | 88 | . | 200 |
| 17 | . | . | . | . | . |
| 18 | . | . | . | . | . |
| 19 | 41 | 125 | 88 | . | 230 |
| 20 | 50 | 138 | 88 | . | 200 |
| 21 | 41 | 88 | 88 | . | 170 |
| 22 | . | . | . | . | . |
| 23 | 62 | 69 | 94 | . | 370 |
| 24 | 50 | 100 | 75 | . | 200 |
| 25 | 50 | 88 | 75 | . | 150 |
| 26 | . | . | . | . | . |
| 27 | 45 | 107 | 82 | . | 170 |
| 28 | 32 | 75 | 69 | . | 130 |
| 29 | 50 | 88 | 88 | . | 180 |
| 30 | 38 | 88 | 75 | . | 160 |
| 31 | 45 | 88 | 82 | . | 170 |
| 32 | 41 | 94 | 88 | . | 170 |
| 33 | 50 | 138 | 100 | . | 290 |
| 34 | 50 | 144 | 88 | . | 240 |
| 35 | 59 | 163 | 107 | . | 220 |

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Strength.sav

| | ChestPressWeek4 | LegCurlWeek4 | ShoulderPressWeek4 | LegExtensionWeek4 |
|---|---|---|---|---|
| 1 | 60 | 150 | 45 | 125 |
| 2 | 92 | 119 | 62 | 119 |
| 3 | . | . | . | . |
| 4 | 60 | 119 | 50 | 119 |
| 5 | 60 | 119 | 41 | 138 |
| 6 | 60 | 132 | 45 | 119 |
| 7 | . | . | . | . |
| 8 | 75 | 157 | 50 | 132 |
| 9 | 75 | 113 | 50 | 125 |
| 10 | 60 | 113 | 50 | 113 |
| 11 | 75 | 138 | 58 | 138 |
| 12 | 60 | 113 | 45 | 119 |
| 13 | . | . | . | . |
| 14 | . | . | . | . |
| 15 | 45 | 107 | 36 | 132 |
| 16 | 55 | 107 | 50 | 100 |
| 17 | . | . | . | . |
| 18 | . | . | . | . |
| 19 | 60 | 132 | 36 | 119 |
| 20 | 70 | 132 | 58 | 125 |
| 21 | 60 | 107 | 50 | 74 |
| 22 | . | . | . | . |
| 23 | 75 | 138 | 75 | 107 |
| 24 | 60 | 107 | 50 | 119 |
| 25 | 55 | 82 | 50 | 69 |
| 26 | . | . | . | . |
| 27 | 60 | 100 | 50 | 119 |

Strength.sav

| | LatPullDownWeek4 | WEEK6 | LegPressWeek6 | ChestPressWeek6 | LegCurlWeek6 |
|---|---|---|---|---|---|
| 1 | 75 | . | 200 | 60 | 157 |
| 2 | 107 | . | 220 | 100 | 119 |
| 3 | . | . | . | . | . |
| 4 | 107 | . | 220 | 75 | 144 |
| 5 | 88 | . | 310 | 60 | 125 |
| 6 | 74 | . | 260 | 60 | 113 |
| 7 | . | . | . | . | . |
| 8 | 74 | . | 260 | 75 | 157 |
| 9 | 82 | . | 230 | 75 | 132 |
| 10 | 88 | . | 230 | 75 | 144 |
| 11 | 107 | . | 220 | 85 | 138 |
| 12 | 72 | . | 200 | 60 | 113 |
| 13 | . | . | . | . | . |
| 14 | . | . | . | . | . |
| 15 | 88 | . | 190 | 60 | 113 |
| 16 | 88 | . | 260 | 60 | 119 |
| 17 | . | . | . | . | . |
| 18 | . | . | . | . | . |
| 19 | 74 | . | 240 | 75 | 132 |
| 20 | 74 | . | 190 | 60 | 138 |
| 21 | 100 | . | 190 | 75 | 125 |
| 22 | . | . | . | . | . |
| 23 | 107 | . | 280 | 75 | 138 |
| 24 | 88 | . | 240 | 70 | 119 |
| 25 | 69 | . | 190 | 55 | 100 |
| 26 | . | . | . | . | . |
| 27 | 88 | . | . | 55 | 107 |
| 28 | 69 | . | 140 | 40 | 69 |
| 29 | 88 | . | 190 | 70 | 113 |
| 30 | 88 | . | . | . | . |
| 31 | 88 | . | 200 | 60 | 119 |
| 32 | 107 | . | 160 | 60 | 107 |
| 33 | 107 | . | 270 | 75 | 144 |
| 34 | 94 | . | 250 | 70 | 163 |
| 35 | 113 | . | 250 | 90 | 169 |

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Strength.sav

| | ShoulderPressWeek6 | LegExtensionWeek6 | LatPullDownWeek6 | WEEK8 | LegPress8 |
|---|---|---|---|---|---|
| 1 | 50 | 138 | 82 | . | 210 |
| 2 | 62 | 125 | 100 | . | 260 |
| 3 | . | . | . | . | . |
| 4 | 58 | 138 | 107 | . | 220 |
| 5 | 45 | 138 | 88 | . | 340 |
| 6 | 45 | 119 | 74 | . | 280 |
| 7 | . | . | . | . | . |
| 8 | 50 | 150 | 100 | . | 240 |
| 9 | 62 | 125 | 88 | . | 260 |
| 10 | 58 | 125 | 74 | . | 230 |
| 11 | 58 | 150 | 107 | . | 250 |
| 12 | 41 | 119 | 75 | . | 230 |
| 13 | . | . | . | . | . |
| 14 | . | . | . | . | . |
| 15 | 41 | 125 | 74 | . | 200 |
| 16 | 58 | 119 | 88 | . | 300 |
| 17 | . | . | . | . | . |
| 18 | . | . | . | . | . |
| 19 | 45 | 125 | 107 | . | 250 |
| 20 | 50 | 144 | 74 | . | 220 |
| 21 | 50 | 113 | 100 | . | 240 |
| 22 | . | . | . | . | . |
| 23 | 75 | 107 | 74 | . | 280 |
| 24 | 50 | 119 | 74 | . | 240 |
| 25 | 50 | 100 | 69 | . | 180 |
| 26 | . | . | . | . | . |
| 27 | 50 | 119 | 88 | . | 160 |
| 28 | 38 | 82 | 69 | . | 160 |
| 29 | 50 | 94 | 88 | . | 190 |
| 30 | . | . | . | . | . |
| 31 | 69 | 88 | 88 | . | 200 |
| 32 | 50 | 107 | 107 | . | 170 |
| 33 | 62 | 163 | 113 | . | 280 |
| 34 | 58 | 163 | 100 | . | 290 |
| 35 | 68 | 169 | 125 | . | 270 |

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Strength.sav

| | ChestPress8 | LegCurl8 | ShoulderPress8 | LegExtension8 |
|---|---|---|---|---|
| 1 | 60 | 182 | 50 | 144 |
| 2 | 100 | 125 | 70 | 132 |
| 3 | . | . | . | . |
| 4 | 75 | 157 | 58 | 144 |
| 5 | 60 | 132 | 50 | 144 |
| 6 | 75 | 125 | 50 | 138 |
| 7 | . | . | . | . |
| 8 | 75 | 169 | 62 | 157 |
| 9 | 75 | 132 | 62 | 132 |
| 10 | 75 | 144 | 58 | 157 |
| 11 | 90 | 157 | 62 | 169 |
| 12 | 60 | 119 | 55 | 119 |
| 13 | . | . | . | . |
| 14 | . | . | . | . |
| 15 | 60 | 119 | 63 | 125 |
| 16 | 60 | 119 | 62 | 125 |
| 17 | . | . | . | . |
| 18 | . | . | . | . |
| 19 | 75 | 132 | 63 | 132 |
| 20 | 75 | 150 | 70 | 144 |
| 21 | 90 | 125 | 62 | 119 |
| 22 | . | . | . | . |
| 23 | 85 | 138 | 75 | 119 |
| 24 | 60 | 125 | 62 | 125 |
| 25 | 70 | 107 | 50 | 94 |
| 26 | . | . | . | . |
| 27 | 55 | 107 | 50 | 119 |
| 28 | 40 | 75 | 32 | 100 |
| 29 | 70 | 119 | 50 | 113 |
| 30 | . | . | . | . |
| 31 | 60 | 119 | 50 | 94 |
| 32 | 60 | 107 | 50 | 113 |
| 33 | 85 | 150 | 62 | 163 |
| 34 | 75 | 169 | 62 | 163 |
| 35 | 60 | 163 | 68 | 175 |

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Strength.sav

| | LatPullDown8 | POST | LegPress8_A | ChestPress8_A | LegCurl8_A |
|---|---|---|---|---|---|
| 1 | 88 | . | 200 | 70 | 182 |
| 2 | 107 | . | 250 | 85 | 125 |
| 3 | . | . | . | . | . |
| 4 | 113 | . | 210 | 75 | 150 |
| 5 | 88 | . | . | . | . |
| 6 | 107 | . | 280 | 75 | 150 |
| 7 | . | . | . | . | . |
| 8 | 100 | . | 250 | 85 | 169 |
| 9 | 94 | . | 270 | 85 | 138 |
| 10 | 94 | . | 260 | 85 | 150 |
| 11 | 107 | . | 220 | 90 | 163 |
| 12 | 82 | . | 200 | 60 | 119 |
| 13 | . | . | . | . | . |
| 14 | . | . | . | . | . |
| 15 | 100 | . | 180 | 60 | 119 |
| 16 | 94 | . | 300 | 70 | 119 |
| 17 | . | . | . | . | . |
| 18 | . | . | . | . | . |
| 19 | 107 | . | 250 | 75 | 138 |
| 20 | 113 | . | 138 | 75 | 150 |
| 21 | 100 | . | 190 | 75 | 138 |
| 22 | . | . | . | . | . |
| 23 | 94 | . | 280 | 90 | 138 |
| 24 | 94 | . | 250 | 60 | 138 |
| 25 | 75 | . | 180 | 60 | 113 |
| 26 | . | . | . | . | . |
| 27 | 88 | . | 150 | 55 | 100 |
| 28 | 63 | . | 140 | 30 | 69 |
| 29 | 88 | . | 190 | 60 | 100 |
| 30 | . | . | . | . | . |
| 31 | 94 | . | 190 | 60 | 119 |
| 32 | 113 | . | 160 | 60 | 100 |
| 33 | 119 | . | 290 | 75 | 150 |
| 34 | 100 | . | 290 | 75 | 169 |
| 35 | 125 | . | 270 | 100 | 169 |

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Strength.sav

| | ShoulderPress8_A | LegExtension8_A | LatPullDown8_A | V51 |
|---|---|---|---|---|
| 1 | 50 | 144 | 94 | . |
| 2 | 62 | 132 | 94 | . |
| 3 | . | . | . | . |
| 4 | 58 | 150 | 107 | . |
| 5 | . | . | . | . |
| 6 | 50 | 132 | 107 | . |
| 7 | . | . | . | . |
| 8 | 62 | 157 | 94 | . |
| 9 | 58 | 132 | 88 | . |
| 10 | 58 | 157 | 94 | . |
| 11 | 62 | 157 | 107 | . |
| 12 | 50 | 119 | 82 | . |
| 13 | . | . | . | . |
| 14 | . | . | . | . |
| 15 | 45 | 132 | 100 | . |
| 16 | 62 | 132 | 94 | . |
| 17 | . | . | . | . |
| 18 | . | . | . | . |
| 19 | 45 | 144 | 113 | . |
| 20 | 62 | 138 | 107 | . |
| 21 | 58 | 113 | 100 | . |
| 22 | . | . | . | . |
| 23 | 70 | 119 | 100 | . |
| 24 | 62 | 144 | 94 | . |
| 25 | 58 | 94 | 75 | . |
| 26 | . | . | . | . |
| 27 | 45 | 119 | 82 | |

Strength.sav

| | LegPressPreAVERAGE | LegExtPreAVERAGE | LegCurlPreAVERAGE |
|---|---|---|---|
| 1 | 175.00 | 90.75 | 112.50 |
| 2 | 230.00 | 106.50 | 94.00 |
| 3 | 230.00 | 156.50 | 131.00 |
| 4 | 200.00 | 106.50 | 94.00 |
| 5 | 245.00 | 112.75 | 93.75 |
| 6 | 210.00 | 106.25 | 115.75 |
| 7 | 112.50 | 112.50 | 112.50 |
| 8 | 215.00 | 125.00 | 131.25 |
| 9 | 245.00 | 103.25 | 109.50 |
| 10 | 195.00 | 112.50 | 90.75 |
| 11 | 190.00 | 125.00 | 100.25 |
| 12 | 175.00 | 93.75 | 100.00 |
| 13 | 325.00 | 144.00 | 131.25 |
| 14 | 200.00 | 137.50 | 106.50 |
| 15 | 185.00 | 115.75 | 97.00 |
| 16 | 185.00 | 90.75 | 103.25 |
| 17 | 210.00 | 87.50 | 94.00 |
| 18 | 130.00 | 69.00 | 65.75 |
| 19 | 210.00 | 112.50 | 103.25 |
| 20 | 175.00 | 112.50 | 109.50 |
| 21 | 155.00 | 100.00 | 109.50 |
| 22 | 160.00 | 65.75 | 75.00 |
| 23 | 230.00 | 72.00 | 69.00 |
| 24 | 180.00 | 100.00 | 100.00 |
| 25 | 150.00 | 62.50 | 87.50 |
| 26 | . | . | . |
| 27 | 145.00 | 97.00 | 81.50 |
| 28 | 125.00 | 78.25 | 61.75 |
| 29 | 180.00 | 84.50 | 96.00 |
| 30 | 140.00 | 75.00 | 65.75 |

Strength.sav

| | ChestPressPreAVERAGE | ShoulderPressPreAVERAGE |
|---|---|---|
| 1 | 52.00 | 45.00 |
| 2 | 74.50 | 57.50 |
| 3 | 85.00 | . |
| 4 | 44.50 | 45.00 |
| 5 | 44.50 | 36.00 |
| 6 | 55.00 | 42.75 |
| 7 | 74.50 | 62.00 |
| 8 | 72.25 | 49.00 |
| 9 | 67.00 | 49.50 |
| 10 | 59.50 | 49.50 |
| 11 | 72.25 | 49.50 |
| 12 | 55.00 | 40.50 |
| 13 | 89.50 | 62.00 |
| 14 | 59.50 | 31.50 |
| 15 | 49.75 | 36.00 |
| 16 | 42.25 | 40.50 |
| 17 | 59.50 | 49.50 |
| 18 | 44.50 | 29.25 |
| 19 | 57.25 | 31.50 |
| 20 | 64.75 | 49.50 |
| 21 | 62.50 | 45.00 |
| 22 | 49.75 | 29.25 |
| 23 | 74.50 | 59.75 |
| 24 | 65.00 | 49.50 |
| 25 | 44.50 | 62.50 |
| 26 | . | . |
| 27 | 44.50 | 38.25 |
| 28 | 29.50 | 22.50 |
| 29 | 59.50 | 49.50 |
| 30 | 29.50 | 29.25 |
| 31 | 57.25 | 33.75 |
| 32 | 49.75 | 38.25 |
| 33 | 67.00 | 47.25 |
| 34 | 65.00 | 51.75 |
| 35 | 87.25 | 63.00 |

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| | LatPullDownPreAVERAGE |
|---|---|
| 1 | 78.25 |
| 2 | 87.50 |
| 3 | 694.00 |
| 4 | 106.50 |
| 5 | 81.25 |
| 6 | 87.50 |
| 7 | 106.50 |
| 8 | 81.50 |
| 9 | 84.50 |
| 10 | 87.50 |
| 11 | 84.50 |
| 12 | 75.00 |
| 13 | 115.75 |
| 14 | 94.00 |
| 15 | 81.50 |
| 16 | 78.25 |
| 17 | 81.50 |
| 18 | 69.00 |
| 19 | 87.75 |
| 20 | 90.75 |
| 21 | 90.75 |
| 22 | 69.00 |
| 23 | 94.00 |
| 24 | 81.25 |
| 25 | 69.00 |
| 26 | . |
| 27 | 75.25 |
| 28 | 59.50 |
| 29 | 78.25 |
| 30 | 72.00 |
| 31 | 72.00 |
| 32 | 84.50 |
| 33 | 90.75 |
| 34 | 87.50 |
| 35 | 103.25 |

| | | | | |
|---|---|---|---|---|
| 47 | | . | . | . |
| 48 | | . | . | . |
| 49 | | . | . | . |
| 50 | | . | . | . |
| 51 | | . | . | . |
| 52 | | . | . | . |
| 53 | | . | . | . |
| 54 | | . | . | . |
| 55 | | . | . | . |
| 56 | | . | . | . |
| 57 | | . | . | . |
| 58 | | . | . | . |
| 59 | | . | . | . |
| 60 | | . | . | . |
| 61 | | . | . | . |
| 62 | | . | . | . |
| 63 | | . | . | . |
| 64 | | . | . | . |
| 65 | | . | . | . |
| 66 | | . | . | . |
| 67 | | . | . | . |
| 68 | | . | . | . |
| 69 | | . | . | . |
| 70 | | . | . | . |

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Unfiled Notes Page 16

Strength.sav

| | LegCurlPre1 |
|---|---|
| 36 | 100 |
| 37 | 125 |
| 38 | 169 |
| 39 | . |
| 40 | . |
| 41 | . |
| 42 | . |
| 43 | . |
| 44 | . |
| 45 | . |
| 46 | . |

Strength.sav

| | ShoulderPressPre1 | LegExtensionPre1 | LatPullDownPre1 | PRE2 | LegPressPre2 |
|---|---|---|---|---|---|
| 36 | 41 | 94 | 75 | . | 190 |
| 37 | 32 | 113 | 75 | . | 260 |
| 38 | 68 | 200 | 107 | . | 230 |
| 39 | . | . | . | . | . |
| 40 | . | . | . | . | . |
| 41 | . | . | . | . | . |
| 42 | . | . | . | . | . |
| 43 | . | . | . | . | . |
| 44 | . | . | . | . | . |
| 45 | . | . | . | . | . |
| 46 | . | . | . | . | . |
| 47 | . | . | . | . | . |
| 48 | . | . | . | . | . |
| 49 | . | . | . | . | . |
| 50 | . | . | . | . | . |
| 51 | . | . | . | . | . |
| 52 | . | . | . | . | . |
| 53 | . | . | . | . | . |
| 54 | . | . | . | . | . |
| 55 | . | . | . | . | . |
| 56 | . | . | . | . | . |
| 57 | . | . | . | . | . |
| 58 | . | . | . | . | . |
| 59 | . | . | . | . | . |
| 60 | . | . | . | . | . |

Strength.sav

| | ChestPressPre2 | LegCurlPre2 | ShoulderPressPre2 | LegExtensionPre2 |
|---|---|---|---|---|
| 36 | 55 | 100 | 36 | 100 |
| 37 | 60 | 119 | 36 | 113 |
| 38 | 85 | 163 | 63 | 188 |
| 39 | . | . | . | . |
| 40 | . | . | . | . |
| 41 | . | . | . | . |
| 42 | . | . | . | . |
| 43 | . | . | . | . |
| 44 | . | . | . | . |
| 45 | . | . | . | . |
| 46 | . | . | . | . |
| 47 | . | . | . | . |
| 48 | . | . | . | . |
| 49 | . | . | . | . |
| 50 | . | . | . | . |
| 51 | . | . | . | . |
| 52 | . | . | . | . |
| 53 | . | . | . | . |
| 54 | . | . | . | . |
| 55 | . | . | . | . |
| 56 | . | . | . | . |
| 57 | . | . | . | . |
| 58 | . | . | . | . |
| 59 | . | . | . | . |

Strength.sav

| | LatPullDownPre2 | WEEK2 | LegPressWeek2 | ChestPressWeek2 | LegCurlWeek2 |
|---|---|---|---|---|---|
| 36 | 63 | . | 200 | 60 | 100 |
| 37 | 82 | . | 260 | 60 | 125 |
| 38 | 113 | . | 230 | 85 | 194 |
| 39 | . | . | . | . | . |
| 40 | . | . | . | . | . |
| 41 | . | . | . | . | . |
| 42 | . | . | . | . | . |
| 43 | . | . | . | . | . |
| 44 | . | . | . | . | . |
| 45 | . | . | . | . | . |
| 46 | . | . | . | . | . |
| 47 | . | . | . | . | . |
| 48 | . | . | . | . | . |
| 49 | . | . | . | . | . |
| 50 | . | . | . | . | . |
| 51 | . | . | . | . | . |
| 52 | . | . | . | . | . |
| 53 | . | . | . | . | . |
| 54 | . | . | . | . | . |
| 55 | . | . | . | . | . |
| 56 | . | . | . | . | . |
| 57 | . | . | . | . | . |
| 58 | . | . | . | . | . |
| 59 | . | . | . | . | . |
| 60 | . | . | . | . | . |
| 61 | . | . | . | . | . |
| 62 | . | . | . | . | . |
| 63 | . | . | . | . | . |
| 64 | . | . | . | . | . |
| 65 | . | . | . | . | . |
| 66 | . | . | . | . | . |
| 67 | . | . | . | . | . |
| 68 | . | . | . | . | . |
| 69 | . | . | . | . | . |
| 70 | . | . | . | . | . |

2/6/13 9:45 AM 20/60

Strength.sav

| | ShoulderPressWeek2 | LegExtensionWeek2 | LatPullDownWeek2 | WEEK4 | LegPressWeek4 |
|---|---|---|---|---|---|
| 36 | 41 | 94 | 82 | . | 210 |
| 37 | 36 | 125 | 75 | . | 270 |
| 38 | 68 | 188 | 119 | . | 240 |
| 39 | . | . | . | . | . |
| 40 | . | . | . | . | . |
| 41 | . | . | . | . | . |
| 42 | . | . | . | . | . |
| 43 | . | . | . | . | . |
| 44 | . | . | . | . | . |
| 45 | . | . | . | . | . |
| 46 | . | . | . | . | . |
| 47 | . | . | . | . | . |
| 48 | . | . | . | . | . |
| 49 | . | . | . | . | . |
| 50 | . | . | . | . | . |
| 51 | . | . | . | . | . |
| 52 | . | . | . | . | . |
| 53 | . | . | . | . | . |
| 54 | . | . | . | . | . |
| 55 | . | . | . | . | . |
| 56 | . | . | . | . | . |
| 57 | . | . | . | . | . |
| 58 | . | . | . | . | . |
| 59 | . | . | . | . | . |
| 60 | . | . | . | . | . |
| 61 | . | . | . | . | . |
| 62 | . | . | . | . | . |
| 63 | . | . | . | . | . |
| 64 | . | . | . | . | . |
| 65 | . | . | . | . | . |
| 66 | . | . | . | . | . |
| 67 | . | . | . | . | . |
| 68 | . | . | . | . | . |
| 69 | . | . | . | . | . |
| 70 | . | . | . | . | . |

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Strength.sav

| | ChestPressWeek4 | LegCurlWeek4 | ShoulderPressWeek4 | LegExtensionWeek4 |
|---|---|---|---|---|
| 36 | 60 | 119 | 50 | 113 |
| 37 | 60 | 119 | 41 | 144 |
| 38 | 90 | 207 | 68 | 207 |
| 39 | . | . | . | . |
| 40 | . | . | . | . |
| 41 | . | . | . | . |
| 42 | . | . | . | . |
| 43 | . | . | . | . |
| 44 | . | . | . | . |
| 45 | . | . | . | . |
| 46 | . | . | . | . |
| 47 | . | . | . | . |
| 48 | . | . | . | . |
| 49 | . | . | . | . |
| 50 | . | . | . | . |
| 51 | . | . | . | . |
| 52 | . | . | . | . |
| 53 | . | . | . | . |
| 54 | . | . | . | . |
| 55 | . | . | . | . |
| 56 | . | . | . | . |
| 57 | . | . | . | . |
| 58 | . | . | . | . |
| 59 | . | . | . | . |
| 60 | . | . | . | . |
| 61 | . | . | . | . |
| 62 | . | . | . | . |
| 63 | . | . | . | . |
| 64 | . | . | . | . |
| 65 | . | . | . | . |
| 66 | . | . | . | . |
| 67 | . | . | . | . |
| 68 | . | . | . | . |
| 69 | . | . | . | . |
| 70 | . | . | . | . |

2/6/13 9:45 AM 22/60

Strength.sav

| | LatPullDownWeek4 | WEEK6 | LegPressWeek6 | ChestPressWeek6 | LegCurlWeek6 |
|---|---|---|---|---|---|
| 36 | 82 | . | 220 | 70 | 132 |
| 37 | 88 | . | 280 | 62 | 125 |
| 38 | 125 | . | 260 | 100 | 225 |
| 39 | . | . | . | . | . |
| 40 | . | . | . | . | . |
| 41 | . | . | . | . | . |
| 42 | . | . | . | . | . |
| 43 | . | . | . | . | . |
| 44 | . | . | . | . | . |
| 45 | . | . | . | . | . |
| 46 | . | . | . | . | . |
| 47 | . | . | . | . | . |
| 48 | . | . | . | . | . |
| 49 | . | . | . | . | . |
| 50 | . | . | . | . | . |
| 51 | . | . | . | . | . |
| 52 | . | . | . | . | . |
| 53 | . | . | . | . | . |
| 54 | . | . | . | . | . |
| 55 | . | . | . | . | . |
| 56 | . | . | . | . | . |
| 57 | . | . | . | . | . |
| 58 | . | . | . | . | . |
| 59 | . | . | . | . | . |
| 60 | . | . | . | . | . |
| 61 | . | . | . | . | . |
| 62 | . | . | . | . | . |
| 63 | . | . | . | . | . |
| 64 | . | . | . | . | . |
| 65 | . | . | . | . | . |
| 66 | . | . | . | . | . |
| 67 | . | . | . | . | . |
| 68 | . | . | . | . | . |
| 69 | . | . | . | . | . |
| 70 | . | . | . | . | . |

Strength.sav

| | ShoulderPressWeek6 | LegExtensionWeek6 | LatPullDownWeek6 | WEEK8 | LegPress8 |
|---|---|---|---|---|---|
| 36 | 50 | 119 | 88 | . | 240 |
| 37 | 45 | 150 | 94 | . | 260 |
| 38 | 83 | 225 | 138 | . | 260 |
| 39 | . | . | . | . | . |
| 40 | . | . | . | . | . |
| 41 | . | . | . | . | . |
| 42 | . | . | . | . | . |
| 43 | . | . | . | . | . |
| 44 | . | . | . | . | . |
| 45 | . | . | . | . | . |
| 46 | . | . | . | . | . |
| 47 | . | . | . | . | . |
| 48 | . | . | . | . | . |
| 49 | . | . | . | . | . |
| 50 | . | . | . | . | . |
| 51 | . | . | . | . | . |
| 52 | . | . | . | . | . |
| 53 | . | . | . | . | . |
| 54 | . | . | . | . | . |
| 55 | . | . | . | . | . |
| 56 | . | . | . | . | . |
| 57 | . | . | . | . | . |
| 58 | . | . | . | . | . |
| 59 | . | . | . | . | . |
| 60 | . | . | . | . | . |
| 61 | . | . | . | . | . |
| 62 | . | . | . | . | . |
| 63 | . | . | . | . | . |
| 64 | . | . | . | . | . |
| 65 | . | . | . | . | . |
| 66 | . | . | . | . | . |
| 67 | . | . | . | . | . |
| 68 | . | . | . | . | . |
| 69 | . | . | . | . | . |
| 70 | . | . | . | . | . |

2/6/13 9:45 AM 24/60

Strength.sav

| | ChestPress8 | LegCurl8 | ShoulderPress8 | LegExtension8 |
|---|---|---|---|---|
| 36 | 75 | 132 | 50 | 125 |
| 37 | 62 | 125 | 45 | 132 |
| 38 | 100 | 207 | 87 | 225 |
| 39 | . | . | . | . |
| 40 | . | . | . | . |
| 41 | . | . | . | . |
| 42 | . | . | . | . |
| 43 | . | . | . | . |
| 44 | . | . | . | . |
| 45 | . | . | . | . |
| 46 | . | . | . | . |
| 47 | . | . | . | . |
| 48 | . | . | . | . |
| 49 | . | . | . | . |
| 50 | . | . | . | . |
| 51 | . | . | . | . |
| 52 | . | . | . | . |
| 53 | . | . | . | . |
| 54 | . | . | . | . |
| 55 | . | . | . | . |
| 56 | . | . | . | . |
| 57 | . | . | . | . |
| 58 | . | . | . | . |
| 59 | . | . | . | . |
| 60 | . | . | . | . |
| 61 | . | . | . | . |
| 62 | . | . | . | . |
| 63 | . | . | . | . |
| 64 | . | . | . | . |
| 65 | . | . | . | . |
| 66 | . | . | . | . |
| 67 | . | . | . | . |
| 68 | . | . | . | . |
| 69 | . | . | . | . |
| 70 | . | . | . | . |

2/6/13 9:45 AM 26/60

Strength.sav

| | LatPullDown8 | POST | LegPress8_A | ChestPress8_A | LegCurl8_A |
|---|---|---|---|---|---|
| 36 | 88 | . | 240 | 75 | 144 |
| 37 | 94 | . | 280 | 70 | 150 |
| 38 | 138 | . | 240 | 100 | 200 |
| 39 | . | . | . | . | . |
| 40 | . | . | . | . | . |
| 41 | . | . | . | . | . |
| 42 | . | . | . | . | . |
| 43 | . | . | . | . | . |
| 44 | . | . | . | . | . |
| 45 | . | . | . | . | . |
| 46 | . | . | . | . | . |
| 47 | . | . | . | . | . |
| 48 | . | . | . | . | . |
| 49 | . | . | . | . | . |
| 50 | . | . | . | . | . |
| 51 | . | . | . | . | . |
| 52 | . | . | . | . | . |
| 53 | . | . | . | . | . |
| 54 | . | . | . | . | . |
| 55 | . | . | . | . | . |
| 56 | . | . | . | . | . |
| 57 | . | . | . | . | . |
| 58 | . | . | . | . | . |
| 59 | . | . | . | . | . |
| 60 | . | . | . | . | . |
| 61 | . | . | . | . | . |
| 62 | . | . | . | . | . |
| 63 | . | . | . | . | . |
| 64 | . | . | . | . | . |
| 65 | . | . | . | . | . |
| 66 | . | . | . | . | . |
| 67 | . | . | . | . | . |
| 68 | . | . | . | . | . |
| 69 | . | . | . | . | . |
| 70 | . | . | . | . | . |

2/6/13 9:45 AM 26/60

Strength.sav

| | ShoulderPress8_A | LegExtension8_A | LatPullDown8_A | V51 |
|---|---|---|---|---|
| 36 | 50 | 125 | 88 | . |
| 37 | 45 | 150 | 94 | . |
| 38 | 87 | 225 | 138 | . |
| 39 | . | . | . | . |
| 40 | . | . | . | . |
| 41 | . | . | . | . |
| 42 | . | . | . | . |
| 43 | . | . | . | . |
| 44 | . | . | . | . |
| 45 | . | . | . | . |
| 46 | . | . | . | . |
| 47 | . | . | . | . |
| 48 | . | . | . | . |
| 49 | . | . | . | . |
| 50 | . | . | . | . |
| 51 | . | . | . | . |
| 52 | . | . | . | . |
| 53 | . | . | . | . |
| 54 | . | . | . | . |
| 55 | . | . | . | . |
| 56 | . | . | . | . |
| 57 | . | . | . | . |
| 58 | . | . | . | . |
| 59 | . | . | . | . |
| 60 | . | . | . | . |
| 61 | . | . | . | . |
| 62 | . | . | . | . |
| 63 | . | . | . | . |
| 64 | . | . | . | . |
| 65 | . | . | . | . |
| 66 | . | . | . | . |
| 67 | . | . | . | . |
| 68 | . | . | . | . |
| 69 | . | . | . | . |
| 70 | . | . | . | . |

2/6/13 9:45 AM 27/60

Strength.sav

| | LegPressPreAVERAGE | LegExtPreAVERAGE | LegCurlPreAVERAGE |
|---|---|---|---|
| 36 | 195.00 | 97.00 | 100.00 |
| 37 | 255.00 | 112.50 | 122.00 |
| 38 | 270.00 | 193.75 | 165.75 |
| 39 | . | . | . |
| 40 | . | . | . |
| 41 | . | . | . |
| 42 | . | . | . |
| 43 | . | . | . |
| 44 | . | . | . |
| 45 | . | . | . |
| 46 | . | . | . |
| 47 | . | . | . |
| 48 | . | . | . |
| 49 | . | . | . |
| 50 | . | . | . |
| 51 | . | . | . |
| 52 | . | . | . |
| 53 | . | . | . |
| 54 | . | . | . |
| 55 | . | . | . |
| 56 | . | . | . |
| 57 | . | . | . |
| 58 | . | . | . |
| 59 | . | . | . |

Strength.sav

| | ChestPressPreAVERAGE | ShoulderPressPreAVERAGE |
|---|---|---|
| 36 | 57.25 | 38.25 |
| 37 | 52.00 | 33.75 |
| 38 | 87.25 | 65.25 |
| 39 | . | . |
| 40 | . | . |
| 41 | . | . |
| 42 | . | . |
| 43 | . | . |
| 44 | . | . |
| 45 | . | . |
| 46 | . | . |
| 47 | . | . |
| 48 | . | . |
| 49 | . | . |
| 50 | . | . |
| 51 | . | . |
| 52 | . | . |
| 53 | . | . |
| 54 | . | . |

Strength.

| | LatPullDownPreAVERAGE |
|---|---|
| 36 | 68.75 |
| 37 | 78.25 |
| 38 | 109.50 |
| 39 | . |

**Ultrasound**

Ultrasound.sav

| | ID | Code1young | FilterPostHocsN26 | MUSCLE | @50QPRE1 |
|---|---|---|---|---|---|
| 1 | | . | 5.00 | . | . |
| 2 | LD01 | 1 | 8.00 | . | . |
| 3 | LD02 | 1 | 8.00 | . | . |
| 4 | LD03 | 1 | 5.00 | . | . |
| 5 | LD04 | 1 | 8.00 | . | . |
| 6 | LD05 | 1 | 8.00 | . | . |
| 7 | LD06 | 1 | 8.00 | . | . |
| 8 | LD07 | 1 | 5.00 | . | . |
| 9 | LD08 | 1 | 8.00 | . | . |
| 10 | LD30 | 1 | 8.00 | . | . |
| 11 | LD10 | 1 | 8.00 | . | . |
| 12 | LD11 | 1 | 8.00 | . | . |
| 13 | LD12 | 1 | 8.00 | . | . |
| 14 | LD13 | 1 | 5.00 | . | . |
| 15 | LD14 | 2 | 5.00 | . | . |
| 16 | LD15 | 2 | 8.00 | . | . |
| 17 | LD16 | 2 | 8.00 | . | . |
| 18 | LD17 | 2 | 5.00 | . | . |
| 19 | LD18 | 2 | 5.00 | . | . |
| 20 | LD19 | 2 | 8.00 | . | . |
| 21 | LD20 | 2 | 8.00 | . | . |
| 22 | LD21 | 2 | 8.00 | . | . |
| 23 | LD22 | 2 | 5.00 | . | . |
| 24 | LD23 | 2 | 8.00 | . | . |
| 25 | LD24 | 2 | 5.00 | . | . |
| 26 | LD25 | 2 | 8.00 | . | . |
| 27 | LD26 | 2 | 8.00 | . | . |
| 28 | | . | 5.00 | . | . |
| 29 | LD36 | 2 | 8.00 | . | 4.38 |
| 30 | LD38 | 2 | 8.00 | . | 3.90 |
| 31 | LD39 | 2 | 8.00 | . | 4.58 |
| 32 | LD40 | 2 | 5.00 | . | 4.45 |
| 33 | LD41 | 2 | 8.00 | . | 5.78 |
| 34 | LD42 | 2 | 8.00 | . | 4.08 |
| 35 | LD43 | 1 | 8.00 | . | 4.65 |

Ultrasound.sav

| | @50QuadPre2 | @50Qw1 | @50Qw2 | @50Qw3 |
|---|---|---|---|---|
| 1 | . | . | . | . |
| 2 | 5 | 5.08 | 5.2 | 5.36 |
| 3 | 5 | 4.98 | 4.8 | 4.98 |
| 4 | . | . | . | . |
| 5 | 4 | 4.25 | 4.5 | 4.78 |
| 6 | 5 | 4.98 | 5.0 | 5.18 |
| 7 | 4 | 4.18 | 4.3 | 4.70 |
| 8 | . | . | . | . |
| 9 | 5 | 4.70 | 4.8 | 4.88 |
| 10 | 5 | 4.98 | 5.0 | 5.26 |
| 11 | 5 | 4.40 | 4.9 | 4.73 |
| 12 | 5 | 4.65 | 4.9 | 4.88 |
| 13 | 5 | 4.83 | 5.3 | 5.15 |
| 14 | 6 | 5.18 | 5.3 | . |
| 15 | . | . | . | . |
| 16 | 5 | 4.68 | 4.8 | 4.58 |
| 17 | 4 | 4.35 | 4.7 | 4.78 |
| 18 | . | . | . | . |
| 19 | 4 | 4.48 | 4.4 | 4.38 |
| 20 | 5 | 4.75 | 4.9 | 4.95 |
| 21 | 4 | 4.03 | 4.6 | 4.65 |
| 22 | 4 | 4.70 | 5.1 | 5.08 |
| 23 | 4 | 3.68 | . | . |
| 24 | 6 | 5.50 | 5.5 | 5.58 |
| 25 | 4 | 4.48 | 4.6 | 4.88 |
| 26 | 5 | 4.95 | 5.0 | 5.08 |
| 27 | 4 | 4.35 | 4.4 | 4.45 |
| 28 | . | . | . | . |
| 29 | 5 | 4.68 | 4.5 | 4.58 |
| 30 | 4 | 4.35 | 4.1 | 4.13 |
| 31 | 5 | 5.38 | 5.4 | 5.58 |
| 32 | 5 | 4.70 | 5.0 | 4.70 |
| 33 | 6 | 5.53 | 5.7 | 5.50 |
| 34 | 4 | 4.30 | 4.4 | 4.35 |
| 35 | 5 | 5.22 | 5.2 | 5.35 |

2/6/13 9:47 AM 2/108

Unfiled Notes Page 2

Ultrasound.sav

| | @50Qw4 | @50Qw5 | @50Qw6 | @50Qw7 |
|---|---|---|---|---|
| 1 | . | . | . | . |
| 2 | 5.23 | 5.25 | 5.20 | 5.43 |
| 3 | 5.00 | 5.25 | 5.45 | 5.63 |
| 4 | . | . | . | . |
| 5 | 4.63 | 4.80 | 4.85 | 4.83 |
| 6 | 5.10 | 4.98 | 5.25 | 5.22 |
| 7 | 4.70 | 4.60 | 4.75 | 4.88 |
| 8 | . | . | . | . |
| 9 | 5.10 | 4.95 | 5.01 | 5.28 |
| 10 | 5.38 | 5.76 | 5.68 | 5.53 |
| 11 | 4.98 | 5.00 | 5.18 | 5.13 |
| 12 | 4.78 | 4.93 | 4.90 | 4.93 |
| 13 | 5.10 | 5.35 | 5.30 | 5.35 |
| 14 | . | . | . | . |
| 15 | . | . | . | . |
| 16 | 4.95 | 4.90 | 5.00 | 5.30 |
| 17 | 4.78 | 4.85 | 4.85 | 4.93 |
| 18 | . | . | . | . |
| 19 | 4.43 | . | . | . |
| 20 | 4.88 | 5.05 | 5.15 | 5.18 |
| 21 | 4.75 | 4.70 | 4.78 | 4.93 |
| 22 | 5.08 | 5.22 | 5.23 | 5.43 |
| 23 | . | . | . | . |

Ultrasound.sav

| | @50Qw8 | @50QPOST | @70QPRE1 | @70QuadPre2 |
|---|---|---|---|---|
| 1 | . | . | . | 0 |
| 2 | 5.60 | 5.58 | . | 4 |
| 3 | 5.58 | 5.73 | . | 4 |
| 4 | . | . | . | 0 |
| 5 | 4.78 | 5.08 | . | 0 |
| 6 | 5.45 | 5.68 | . | 4 |
| 7 | 5.00 | 5.10 | . | 3 |
| 8 | . | . | . | 0 |
| 9 | 5.25 | 5.40 | . | 4 |
| 10 | 5.45 | 5.43 | . | 4 |
| 11 | 5.23 | 5.23 | . | 3 |
| 12 | 5.03 | 4.98 | . | 4 |
| 13 | 5.30 | 5.35 | . | 4 |
| 14 | . | . | . | 5 |
| 15 | . | . | . | 0 |
| 16 | 5.25 | 5.63 | . | 4 |
| 17 | 5.05 | 5.20 | . | 2 |
| 18 | . | . | . | 0 |

Ultrasound.sav

| | @70 | @70Qw2 | @70Qw3 | @70Qw4 |
|---|---|---|---|---|
| 1 | . | . | . | . |
| 2 | 4.0800 | 4.1800 | 4.13 | 4.3500 |
| 3 | 4.1800 | 4.1800 | 4.20 | 4.1000 |
| 4 | . | . | . | . |
| 5 | 2.8500 | 2.9800 | 3.83 | 3.5800 |
| 6 | 4.1000 | 4.3800 | 4.49 | 4.3300 |
| 7 | 2.9300 | 2.8300 | 3.28 | 3.4800 |
| 8 | . | . | . | . |
| 9 | 3.7300 | 3.8500 | 3.90 | 3.8000 |
| 10 | 3.8500 | 3.7300 | 4.30 | 4.3800 |
| 11 | 3.0500 | 3.0500 | 3.30 | 2.9800 |
| 12 | 4.0300 | 4.3000 | 4.50 | 4.4500 |
| 13 | 4.3500 | 4.5800 | 4.53 | 4.4000 |
| 14 | 5.0000 | 4.7800 | . | . |
| 15 | . | . | . | . |
| 16 | 4.0300 | 4.2800 | 4.33 | 4.3800 |
| 17 | 2.7000 | 3.2300 | 3.53 | 3.6800 |
| 18 | . | . | . | . |
| 19 | 4.3800 | 4.7300 | 4.46 | 4.6200 |
| 20 | 3.6800 | 3.6800 | 3.63 | 3.8000 |
| 21 | 3.4500 | 3.4800 | 3.88 | 3.9500 |
| 22 | 4.0800 | 4.1800 | 4.15 | 4.0500 |
| 23 | 2.5300 | . | . | . |
| 24 | 4.9300 | 4.7800 | 4.80 | 4.8500 |
| 25 | 3.8300 | 3.5000 | 3.78 | 3.6300 |
| 26 | 4.2800 | 3.9300 | 3.98 | 4.0300 |
| 27 | 3.5500 | 3.5500 | 3.65 | 3.5800 |
| 28 | . | . | . | . |
| 29 | 3.8500 | 3.8300 | 3.98 | 4.1300 |

Ultrasound.sav

| | @70Qw5 | @70Qw6 | @70Qw7 | @70Qw8 |
|---|---|---|---|---|
| 1 | . | . | . | . |
| 2 | 4.1800 | 4.0800 | 4.0500 | 4.0000 |
| 3 | 4.5500 | 4.8000 | 4.7300 | 4.7300 |
| 4 | . | . | . | . |
| 5 | 3.6000 | 4.2300 | 4.1300 | 4.1000 |
| 6 | 4.4800 | 4.6800 | 4.5800 | 4.8500 |
| 7 | 3.3500 | 3.4000 | 3.3800 | 3.5500 |
| 8 | . | . | . | . |
| 9 | 3.8500 | 3.8300 | 3.9800 | 3.8300 |
| 10 | 4.4000 | 4.3300 | 4.5600 | 4.6100 |
| 11 | 3.1200 | 3.5300 | 3.3000 | 3.3000 |
| 12 | 4.5500 | 4.5300 | 4.4000 | 4.5500 |
| 13 | 4.6800 | 4.8800 | 4.9500 | 4.9500 |
| 14 | . | . | . | . |
| 15 | . | . | . | . |
| 16 | 4.6300 | 5.0000 | 4.8800 | 4.9000 |
| 17 | 3.6000 | 3.6800 | 3.9300 | 3.7500 |
| 18 | . | . | . | . |
| 19 | . | . | . | . |
| 20 | 3.6800 | 3.7300 | 3.8800 | 3.7000 |
| 21 | 3.9300 | 4.0300 | 4.1500 | 4.5300 |
| 22 | 4.1300 | 4.3000 | 4.5000 | 4.3000 |
| 23 | . | . | . | . |
| 24 | 4.7000 | 4.6000 | 4.6500 | 4.6800 |
| 25 | 3.6300 | 3.5300 | 3.5000 | . |
| 26 | 4.1000 | 4.1500 | 4.0800 | 3.9300 |
| 27 | 3.5500 | 3.3000 | 3.5000 | 3.7800 |
| 28 | . | . | . | . |

| | @70QPOST | @50QPRE1_A | @50HamPre2 | @50Hw1 |
|---|---|---|---|---|
| 1 | . | . | . | . |
| 2 | 3.98 | . | 5 | 4.8300 |
| 3 | 4.68 | . | 3 | 3.6000 |
| 4 | . | . | . | . |
| 5 | 4.13 | . | 4 | 4.3800 |
| 6 | 4.70 | . | 3 | 2.9500 |
| 7 | 3.45 | . | 4 | 3.2500 |
| 8 | . | . | . | . |
| 9 | 3.75 | . | 4 | 4.1500 |
| 10 | 4.53 | . | 4 | 3.7800 |
| 11 | 3.23 | . | 5 | 5.2000 |
| 12 | 4.62 | . | 3 | 3.5800 |
| 13 | 4.95 | . | 3 | 3.7800 |
| 14 | . | . | 4 | 3.4800 |
| 15 | . | . | . | . |
| 16 | 4.95 | . | 4 | 3.5800 |
| 17 | 3.63 | . | 3 | 3.4300 |
| 18 | . | . | . | . |
| 19 | . | . | 3 | 2.4300 |
| 20 | 4.13 | . | 5 | 5.2000 |
| 21 | 4.40 | . | 3 | 2.6000 |
| 22 | 4.35 | . | 3 | 3.7300 |
| 23 | . | . | 3 | 3.1500 |
| 24 | 4.55 | . | 4 | 3.9800 |
| 25 | . | . | 4 | 3.6300 |
| 26 | 3.68 | . | 4 | 4.1500 |
| 27 | 3.48 | . | 4 | 3.8800 |
| 28 | . | . | . | . |
| 29 | 4.43 | 3.53 | 4 | 3.6500 |
| 30 | 3.95 | 3.08 | 3 | 3.4800 |
| 31 | 4.23 | 3.38 | 3 | 3.4000 |
| 32 | . | 4.10 | 4 | 3.5500 |
| 33 | 4.30 | 3.45 | 4 | 4.1800 |
| 34 | 4.13 | 3.38 | 3 | 3.6500 |
| 35 | 4.77 | 3.98 | 4 | 3.8000 |

Ultrasound.sav

| | @50Hw2 | @50Hw3 | @50Hw4 | @50Hw5 |
|---|---|---|---|---|
| 1 | . | . | . | . |
| 2 | 4.95 | 5.0300 | 4.9300 | 4.9000 |
| 3 | 3.98 | 4.7500 | 4.8800 | 4.7500 |
| 4 | . | . | . | . |
| 5 | 4.95 | 5.4800 | 5.2300 | 5.1800 |
| 6 | 3.08 | 3.0300 | 3.0800 | 3.0500 |
| 7 | 4.03 | 4.0100 | 4.0000 | 4.0800 |
| 8 | . | . | . | . |
| 9 | 4.33 | 4.4000 | 4.6300 | 5.3500 |
| 10 | 3.78 | 3.7000 | 3.6800 | 3.7500 |
| 11 | 5.20 | 5.1500 | 5.2000 | 5.1300 |
| 12 | 3.60 | 3.6300 | 3.6500 | 3.5000 |
| 13 | 3.93 | 3.7600 | 3.8000 | 3.9000 |
| 14 | 4.18 | . | . | . |
| 15 | . | . | . | . |
| 16 | 3.63 | 3.5800 | 4.0300 | 3.7000 |
| 17 | 3.55 | 3.6500 | 3.8000 | 3.9000 |
| 18 | . | . | . | . |
| 19 | 3.10 | 2.8500 | 2.8000 | . |
| 20 | 5.55 | 5.5100 | 5.6000 | 5.3500 |
| 21 | 3.38 | 3.5800 | 3.9500 | 3.7800 |
| 22 | 3.73 | 3.9300 | 3.8800 | 4.2800 |
| 23 | . | . | . | . |
| 24 | 4.18 | 4.0600 | 4.1500 | 4.2800 |
| 25 | 3.73 | 4.0800 | 4.1000 | 4.3000 |
| 26 | 4.15 | 4.3000 | 4.3000 | 4.5500 |
| 27 | 4.13 | 4.0500 | 4.2000 | 4.3300 |
| 28 | . | . | . | . |
| 29 | 3.80 | 3.8800 | 4.1000 | 4.1500 |
| 30 | 3.23 | 3.2000 | 3.3000 | 3.4800 |
| 31 | 3.23 | 3.5300 | 3.8300 | 3.6300 |
| 32 | 3.45 | 3.6000 | 3.2500 | . |
| 33 | 3.85 | 4.0000 | 3.8800 | 3.9000 |
| 34 | 3.33 | 3.3000 | 3.4300 | 3.4600 |
| 35 | 4.33 | 4.2800 | 4.3500 | 4.2300 |

2/6/13 9:47 AM 8/108

Ultrasound.sav

| | @50Hw6 | @50Hw7 | @50Hw8 | @50HPOST |
|---|---|---|---|---|
| 1 | . | . | . | . |
| 2 | 4.85 | 5.33 | 5.31 | 5.20 |
| 3 | 4.93 | 4.75 | 4.63 | 4.88 |
| 4 | . | . | . | . |
| 5 | 5.55 | 5.98 | 5.93 | 5.85 |
| 6 | 3.03 | 3.50 | 3.38 | 3.55 |
| 7 | 4.15 | 4.10 | 4.05 | 4.10 |
| 8 | . | . | . | . |
| 9 | 5.40 | 5.48 | 5.48 | 5.50 |
| 10 | 3.63 | 3.85 | 3.90 | 3.80 |
| 11 | 5.45 | 5.43 | 5.53 | 5.45 |
| 12 | 3.55 | 3.90 | 3.78 | 4.41 |
| 13 | 3.78 | 4.01 | 3.91 | 3.90 |
| 14 | . | . | . | . |
| 15 | . | . | . | . |
| 16 | 4.28 | 4.23 | 4.30 | 4.40 |
| 17 | 3.83 | 4.15 | 4.20 | 3.95 |
| 18 | . | . | . | . |
| 19 | . | . | . | . |
| 20 | 5.46 | 5.30 | 5.48 | 5.40 |
| 21 | 4.05 | 3.93 | 3.98 | 4.03 |
| 22 | 4.13 | 4.28 | 4.33 | 4.28 |
| 23 | . | . | . | . |
| 24 | 4.13 | 4.23 | 4.28 | 4.55 |
| 25 | 4.20 | 4.23 | . | . |
| 26 | 4.45 | 4.60 | 4.53 | 4.45 |
| 27 | 4.15 | 4.53 | 4.48 | 4.63 |
| 28 | . | . | . | . |
| 29 | 4.50 | 4.38 | 4.43 | 4.58 |
| 30 | 3.71 | 3.66 | 3.70 | 3.80 |
| 31 | 4.01 | 4.15 | 4.08 | 3.98 |
| 32 | . | . | . | . |
| 33 | 3.95 | 4.30 | 4.23 | 4.05 |
| 34 | 3.78 | 3.80 | 4.28 | 4.18 |
| 35 | 4.30 | 4.55 | 4.48 | 4.38 |

2/6/13 9:47 AM 9/108

Ultrasound.sav

| | @70QPRE1_A | @70HamPre2 | @70Hw1 | @70Hw2 |
|---|---|---|---|---|
| 1 | . | . | . | . |
| 2 | . | 5.3300 | 4.9600 | 5.3000 |
| 3 | . | 4.1000 | 4.4500 | 4.3300 |
| 4 | . | . | . | . |
| 5 | . | 4.0000 | 3.6800 | 3.5500 |
| 6 | . | 3.6300 | 4.0300 | 4.1800 |
| 7 | . | 3.3800 | 3.3500 | 4.1800 |
| 8 | . | . | . | . |
| 9 | . | 4.2300 | 3.6200 | 4.3300 |
| 10 | . | 4.5800 | 4.1000 | 4.1000 |
| 11 | . | 5.2500 | 5.6300 | 5.4800 |
| 12 | . | 3.9000 | 4.0000 | 4.0300 |
| 13 | . | 3.5000 | 3.9800 | 4.0000 |
| 14 | . | 4.2800 | 4.0300 | 4.4300 |
| 15 | . | . | . | . |
| 16 | . | 3.7800 | 4.0000 | 4.0300 |
| 17 | . | 3.1700 | 3.3800 | 3.5300 |
| | . | . | . | . |
| 19 | . | 2.7000 | 3.0000 | 3.0300 |
| 20 | . | 3.6600 | 3.7300 | 3.7300 |
| 21 | . | 2.7000 | 3.3300 | 2.9300 |
| 22 | . | 3.3100 | 3.5000 | 3.8800 |
| 23 | . | 3.3000 | 3.5800 | . |
| 24 | . | 3.9300 | 4.0300 | 4.1800 |
| 25 | . | 3.2800 | 3.4100 | 3.4300 |
| 26 | . | 4.3600 | 3.9000 | 4.3800 |
| 27 | . | 3.0800 | 2.7000 | 3.2500 |
| 28 | . | . | . | . |
| 29 | 4.8600 | 4.6300 | 4.9800 | 4.7300 |
| 30 | 3.9300 | 3.9300 | 3.9800 | 3.9800 |
| 31 | 3.6800 | 4.0000 | 4.1000 | 4.4800 |
| 32 | 5.0000 | 3.5000 | 4.1300 | 3.5800 |
| 33 | 3.0300 | 4.2500 | 3.7000 | 3.5000 |
| 34 | 3.8300 | 3.7500 | 3.5500 | 3.8000 |
| 35 | 4.6000 | 4.3800 | 4.1000 | 4.3000 |

2/6/13 9:47 AM 10/108

Ultrasound.sav

| | @70Hw3 | @70Hw4 | @70Hw5 | @70Hw6 |
|---|---|---|---|---|
| 1 | . | . | . | . |
| 2 | 5.5300 | 5.48 | 5.2000 | 5.2300 |
| 3 | 4.2800 | 4.95 | 4.6300 | 4.7300 |
| 4 | . | . | . | . |
| 5 | 4.1500 | 4.10 | 4.7000 | 4.7000 |
| 6 | 4.3300 | 4.53 | 4.6000 | 4.7800 |
| 7 | 4.8300 | 4.80 | 4.8300 | 4.8300 |
| 8 | . | . | . | . |
| 9 | 4.6000 | 5.08 | 5.7800 | 5.8500 |
| 10 | 4.1300 | 4.28 | 4.4000 | 4.0500 |
| 11 | 5.5800 | 5.50 | 5.5800 | 5.6300 |
| 12 | 4.0800 | 4.10 | 4.1300 | 4.0000 |
| 13 | 3.9000 | 3.83 | 4.1300 | 4.3300 |
| 14 | . | . | . | . |
| 15 | . | . | . | . |
| 16 | 3.8100 | 4.18 | 4.1000 | 4.4800 |
| 17 | 3.3000 | 3.30 | 3.6500 | 3.6800 |
| 18 | . | . | . | . |
| 19 | 2.7500 | 2.98 | . | . |
| 20 | 3.8000 | 4.13 | 4.2000 | 4.3500 |
| 21 | 3.0300 | 3.18 | 3.0800 | 3.3000 |
| 22 | 3.6800 | 3.55 | 3.7800 | 4.0300 |
| 23 | . | . | . | . |
| 24 | 4.3000 | 4.20 | 4.1200 | 4.1200 |
| 25 | 3.5500 | 3.63 | 3.5800 | 3.5500 |
| 26 | 4.6000 | 4.53 | 4.6000 | 4.5500 |
| 27 | 3.0800 | 3.18 | 3.6000 | 3.4500 |
| 28 | . | . | . | . |
| 29 | 4.8000 | 4.95 | 4.7800 | 4.7000 |
| 30 | 3.8800 | 4.13 | 3.6300 | 3.8300 |
| 31 | 4.5300 | 4.63 | 4.5300 | 4.8600 |
| 32 | 3.5000 | 3.42 | 3.8300 | . |
| 33 | 4.1800 | 3.88 | 4.1000 | 3.8500 |
| 34 | 3.4800 | 3.43 | 3.8300 | 3.4800 |
| 35 | 4.3500 | 4.28 | 4.3800 | 4.3800 |

2/6/13 9:47 AM 11/108

Ultrasound.sav

| | @70Hw7 | @70Hw8 | @70HPOST | DeltPRE1 |
|---|---|---|---|---|
| 1 | . | . | . | . |
| 2 | 5.2 | 5.28 | 5.13 | . |
| 3 | 4.8 | 5.13 | 4.96 | . |
| 4 | . | . | . | . |
| 5 | 4.5 | 4.60 | 4.58 | . |
| 6 | 4.8 | 4.75 | 4.73 | . |
| 7 | 4.8 | 5.05 | 5.03 | . |
| 8 | . | . | . | . |
| 9 | 6.1 | 5.88 | 5.98 | . |
| 10 | 4.0 | 4.35 | 4.40 | . |
| 11 | 5.9 | 5.88 | 5.83 | . |
| 12 | 4.1 | 4.38 | 4.95 | . |
| 13 | 4.2 | 4.20 | 4.28 | . |
| 14 | . | . | . | . |
| 15 | . | . | . | . |
| 16 | 5.1 | 4.73 | 4.93 | . |
| 17 | 4.0 | 4.18 | 3.85 | . |
| 18 | . | . | . | . |
| 19 | . | . | . | . |
| 20 | 4.3 | 4.28 | 4.23 | . |
| 21 | 3.3 | 3.48 | 3.70 | . |
| 22 | 4.1 | 4.03 | 3.92 | . |
| 23 | . | . | . | . |
| 24 | 4.2 | 4.35 | 4.50 | . |
| 25 | 3.6 | . | . | . |
| 26 | 4.7 | 4.48 | 4.68 | . |
| 27 | 3.7 | 3.58 | 3.48 | . |
| 28 | . | . | . | . |
| 29 | 4.8 | 5.26 | 5.28 | 2.0300 |
| 30 | 4.4 | 4.61 | 4.85 | 1.8500 |
| 31 | 5.0 | 5.28 | 4.88 | 2.3000 |
| 32 | . | . | . | 2.0800 |
| 33 | 3.4 | 4.18 | 3.93 | 2.6500 |
| 34 | 3.9 | 3.71 | 3.85 | 1.8300 |
| 35 | 4.6 | 4.85 | 4.97 | 1.6000 |

2/6/13 9:47 AM 12/108

Ultrasound.sav

| | DeltoidPre2 | DeltW1 | DeltW2 | DeltW3 |
|---|---|---|---|---|
| 1 | . | . | . | . |
| 2 | 1.3000 | 1.2800 | 1.5000 | 1.5500 |
| 3 | 1.0300 | 1.4300 | 1.6300 | 1.6500 |
| 4 | . | . | . | . |
| 5 | 2.0000 | 1.9300 | 2.0500 | 2.0000 |
| 6 | 1.4500 | 1.7300 | 1.8800 | 2.1600 |
| 7 | 1.7000 | 1.8800 | 1.9300 | 1.8500 |
| 8 | . | . | . | . |
| 9 | 1.7000 | 1.8000 | 2.0000 | 2.0300 |
| 10 | 2.1300 | 2.3500 | 2.5300 | 2.4300 |
| 11 | 1.7300 | 1.9000 | 1.7500 | 2.1300 |
| 12 | 1.5800 | 1.4300 | 1.6500 | 1.9000 |
| 13 | 1.4300 | 1.7800 | 1.9800 | 1.9500 |
| 14 | 1.7800 | 1.4300 | 1.4800 | . |
| 15 | . | . | . | . |
| 16 | 1.8500 | 1.4300 | 1.8500 | 1.8000 |
| 17 | 2.1000 | 2.3300 | 2.0800 | 2.5000 |
| 18 | . | . | . | . |
| 19 | 2.5800 | 2.4300 | 2.8000 | 2.7300 |
| 20 | 2.5300 | 2.3800 | 2.2500 | 2.2800 |
| 21 | 2.6300 | 2.5500 | 3.2500 | 2.9800 |
| 22 | 3.7500 | 4.1000 | 3.8300 | 3.6000 |
| 23 | 1.9500 | 2.2000 | . | . |
| 24 | 2.6300 | 2.6800 | 2.6800 | 2.7300 |
| 25 | 2.0800 | 1.7500 | 2.0300 | 2.1300 |
| 26 | 1.9000 | 1.8000 | 1.6300 | 1.9300 |
| 27 | 1.5800 | 1.6800 | 1.7500 | 1.7300 |
| 28 | . | . | . | . |
| 29 | 2.2300 | 2.0300 | 2.2800 | 2.1000 |
| 30 | 2.1500 | 1.8300 | 2.1000 | 1.8000 |
| 31 | 2.2500 | 2.0300 | 2.1800 | 2.2300 |
| 32 | 1.8300 | 1.9500 | 2.2500 | 2.0000 |
| 33 | 2.5300 | 2.5000 | 2.4200 | 2.4800 |
| 34 | 1.8800 | 1.4800 | 1.9800 | 2.0500 |
| 35 | 1.8500 | 1.8000 | 1.5500 | 1.8800 |

2/6/13 9:47 AM 13/108

Ultrasound.sav

| | DeltW4 | DeltW5 | DeltW6 | DeltW7 |
|---|---|---|---|---|
| 1 | . | . | . | . |
| 2 | 1.5200 | 1.4800 | 2.0500 | 1.8300 |
| 3 | 2.1000 | 2.4800 | 2.2000 | 2.4300 |
| 4 | . | . | . | . |
| 5 | 2.1300 | 2.1500 | 2.2500 | 2.3000 |
| 6 | 1.8800 | 1.9800 | 2.0300 | 2.2800 |
| 7 | 1.9800 | 2.0000 | 2.2800 | 2.4500 |
| 8 | . | . | . | . |
| 9 | 1.9800 | 2.0000 | 2.0000 | 2.1800 |
| 10 | 2.4500 | 2.3800 | 2.6500 | 2.5000 |
| 11 | 2.0500 | 2.1500 | 2.6800 | 2.2500 |
| 12 | 1.8000 | 1.8500 | 1.8300 | 2.0300 |
| 13 | 1.8500 | 2.1700 | 2.2800 | 2.4300 |
| 14 | . | . | . | . |
| 15 | . | . | . | . |
| 16 | 1.9500 | 2.0500 | 2.0800 | 2.1000 |
| 17 | 2.3800 | 2.9000 | 2.3800 | 2.3500 |
| 18 | . | . | . | . |
| 19 | 2.6000 | . | . | . |
| 20 | 2.2800 | 2.5300 | 2.6000 | 2.5300 |
| 21 | 3.0800 | 3.0500 | 2.9800 | 3.0800 |
| 22 | 4.2300 | 3.7800 | 4.1800 | 4.1800 |
| 23 | . | . | . | . |
| 24 | 2.7500 | 2.8000 | 2.7800 | 2.8800 |
| 25 | 3.2300 | 2.1300 | 2.0300 | 2.0300 |
| 26 | 2.3000 | 2.1000 | 2.1800 | 2.5500 |
| 27 | 1.7800 | 1.8000 | 1.7500 | 1.7500 |
| 28 | . | . | . | . |
| 29 | 2.2800 | 2.2800 | 2.5300 | 2.4500 |
| 30 | 2.3000 | 1.9800 | 2.0800 | 1.8500 |
| 31 | 2.1500 | 2.3500 | 1.9800 | 2.2500 |
| 32 | 1.9800 | 2.2500 | . | . |
| 33 | 2.3800 | 2.4300 | 2.2300 | 2.3300 |
| 34 | 2.0300 | 2.0000 | 1.7500 | 1.9800 |
| 35 | 1.8500 | 2.0800 | 2.0000 | 1.8300 |

2/6/13 9:47 AM 14/108

Ultrasound.sav

| | DeltW8 | DELTPOST | ChestPRE1 | ChestPre2 |
|---|---|---|---|---|
| 1 | . | . | . | . |
| 2 | 1.60 | 1.65 | . | 2 |
| 3 | 2.38 | 2.33 | . | 1 |
| 4 | . | . | . | . |
| 5 | 2.15 | 2.13 | . | 2 |
| 6 | 2.28 | 1.88 | . | 1 |
| | 2.30 | 2.28 | . | 2 |
| 8 | . | . | . | . |
| 9 | 2.13 | 2.13 | . | 1 |
| 10 | 2.55 | 2.40 | . | 2 |
| 11 | 2.30 | 2.25 | . | 2 |
| 12 | 1.88 | 2.05 | . | 2 |
| 13 | 2.30 | 2.00 | . | 2 |
| 14 | . | . | . | 2 |
| 15 | . | . | . | . |
| 16 | 2.80 | 2.28 | . | 3 |
| 17 | 2.53 | 2.48 | . | 2 |
| 18 | . | . | . | . |
| 19 | . | . | . | 1 |
| 20 | 2.40 | 2.55 | . | 2 |
| 21 | 3.45 | 3.40 | . | 2 |
| 22 | 4.20 | 4.03 | . | 2 |
| 23 | . | . | . | 2 |
| 24 | 3.08 | 2.93 | . | 2 |
| 25 | . | . | . | 2 |
| 26 | 2.50 | 2.40 | . | 2 |
| 27 | 1.98 | 2.15 | . | 1 |
| 28 | . | . | . | . |
| 29 | 2.33 | 2.48 | 2.38 | 2 |
| 30 | 1.95 | 2.28 | 0.93 | 1 |
| 31 | 2.12 | 2.43 | 0.98 | 1 |
| 32 | . | . | 0.95 | 2 |
| 33 | 2.55 | 2.80 | 1.80 | 2 |
| 34 | 2.30 | 2.33 | 1.12 | 1 |
| 35 | 1.90 | 1.69 | 1.20 | 1 |

2/6/13 9:47 AM 16/108

Unfiled Notes Page 15

Ultrasound.sav

| | ChestW1 | ChestW2 | ChestW3 | ChestW4 |
|---|---|---|---|---|
| 1 | . | . | . | . |
| 2 | 1.4000 | 1.4000 | 1.3000 | 1.5300 |
| 3 | 2.0000 | 1.7000 | 1.8000 | 1.9500 |
| 4 | . | . | . | . |
| 5 | 2.2300 | 2.2800 | 2.6300 | 1.8300 |
| 6 | 1.1000 | 1.0500 | 1.1500 | 1.3000 |
| 7 | 1.9800 | 2.1800 | 2.0400 | 1.9800 |
| 8 | . | . | . | . |
| 9 | 1.1800 | 1.3000 | 1.6000 | 1.4300 |
| 10 | 1.3000 | 1.5200 | 1.8800 | 1.2800 |
| 11 | 1.7800 | 1.8800 | 1.7500 | 1.8800 |
| 12 | 2.0000 | 1.7500 | 1.8100 | 1.8500 |
| 13 | 1.9000 | 1.7800 | 1.6800 | 1.5000 |
| 14 | 2.2300 | 2.1000 | . | . |
| 15 | . | . | . | . |
| 16 | 2.4000 | 2.5000 | 2.8300 | 2.8500 |
| 17 | 2.1000 | 1.8000 | 1.7000 | 2.0500 |
| 18 | . | . | . | . |
| 19 | 1.3000 | 1.0500 | 1.1500 | 1.1300 |
| 20 | 1.5500 | 1.8300 | 1.7800 | 1.7500 |
| 21 | 1.7800 | 1.7500 | 1.9000 | 1.7500 |
| 22 | 2.5800 | 2.4000 | 2.5600 | 2.6000 |
| 23 | 1.6300 | . | . | . |
| 24 | 1.6500 | 1.6800 | 1.9800 | 2.0000 |
| 25 | 1.6300 | 1.9500 | 1.6500 | 1.8000 |
| 26 | 1.7800 | 1.7000 | 1.5500 | 1.4300 |
| 27 | 1.9300 | 1.7800 | 1.8600 | 1.8000 |
| 28 | . | . | . | . |
| 29 | 1.1500 | 1.2000 | 1.3800 | 1.2500 |
| 30 | 0.9500 | 0.9300 | 1.0200 | 1.4800 |
| 31 | 1.1800 | 1.7000 | 2.2500 | 2.0500 |
| 32 | 1.6000 | 1.5800 | 1.3000 | 1.5800 |
| 33 | 1.7000 | 1.5500 | 1.6500 | 1.8300 |
| 34 | 1.1200 | 1.0800 | 1.6200 | 1.4300 |
| 35 | 0.8800 | 1.1300 | 0.9500 | 1.2000 |

2/6/13 9:47 AM 16/108

Ultrasound.sav

| | ChestW5 | ChestW6 | ChestW7 | ChestW8 |
|---|---|---|---|---|
| 1 | . | . | . | . |
| 2 | 1.60 | 1.33 | 1.50 | 1.3 |
| 3 | 1.88 | 1.73 | 1.88 | 2.0 |
| 4 | . | . | . | . |
| 5 | 2.43 | 2.23 | 2.00 | 1.4 |
| 6 | 1.45 | 1.18 | 1.43 | 1.6 |
| 7 | 2.23 | 2.63 | 2.71 | 1.9 |
| 8 | . | . | . | . |
| 9 | 1.55 | 1.60 | 1.55 | 1.7 |
| 10 | 1.85 | 2.05 | 2.03 | 1.5 |
| 11 | 2.03 | 1.93 | 1.93 | 1.9 |
| 12 | 1.70 | 1.73 | 1.30 | 1.2 |
| 13 | 1.58 | 1.68 | 1.58 | 1.6 |
| 14 | . | . | . | . |
| 15 | . | . | . | . |
| 16 | 2.85 | 2.80 | 2.90 | 2.9 |
| 17 | 2.25 | 2.30 | 1.93 | 1.8 |
| 18 | . | . | . | . |
| 19 | . | . | . | . |
| 20 | 2.20 | 2.30 | 2.55 | 2.5 |
| 21 | 2.13 | 1.93 | 1.80 | 1.9 |
| 22 | 2.73 | 2.68 | 2.68 | 2.6 |
| 23 | . | . | . | . |
| 24 | 1.90 | 2.08 | 2.03 | 1.8 |
| 25 | 2.18 | 2.18 | 1.95 | . |
| 26 | 1.75 | 1.65 | 2.13 | 1.7 |
| 27 | 1.83 | 1.90 | 2.08 | 1.5 |
| 28 | . | . | . | . |
| 29 | 1.50 | 1.30 | 1.33 | 1.2 |
| 30 | 1.05 | 1.05 | 1.27 | 1.2 |
| 31 | 1.48 | 1.40 | 1.50 | 1.6 |
| 32 | 2.10 | . | . | . |
| 33 | 1.95 | 1.88 | 1.80 | 1.8 |
| 34 | 1.68 | 1.23 | 1.48 | 2.2 |
| 35 | 1.40 | 2.15 | 1.45 | 1.5 |

2/6/13 9:47 AM 17/108

Ultrasound.sav

| | CHESTPOST | SUBPRE1 | SubscapPre2 |
|---|---|---|---|
| 1 | . | . | . |
| 2 | 1.30 | . | 3 |
| 3 | 1.80 | . | 3 |
| 4 | . | . | . |
| 5 | 1.43 | . | 2 |
| 6 | 1.40 | . | 2 |
| 7 | 1.83 | . | 1 |
| 8 | . | . | . |
| 9 | 1.78 | . | 3 |
| 10 | 1.30 | . | 2 |
| 11 | 1.68 | . | 2 |
| 12 | 1.23 | . | 1 |
| 13 | 1.50 | . | 2 |
| 14 | . | . | 2 |
| 15 | . | . | . |
| 16 | 2.75 | . | 2 |
| 17 | 1.43 | . | 2 |
| 18 | . | . | . |
| 19 | . | . | 2 |
| 20 | 2.25 | . | 2 |
| 21 | 1.55 | . | 2 |
| 22 | 2.38 | . | 2 |
| 23 | . | . | 2 |
| 24 | 1.75 | . | 2 |
| 25 | . | . | 2 |
| 26 | 1.93 | . | 1 |
| 27 | 2.05 | . | 2 |
| 28 | . | . | . |
| 29 | 1.03 | 3.05 | 2 |
| 30 | 1.63 | 1.25 | 1 |
| 31 | 1.50 | 0.88 | 1 |
| 32 | . | 1.88 | 2 |
| 33 | 1.95 | 2.20 | 2 |
| 34 | 2.05 | 0.95 | 1 |
| 35 | 1.15 | 1.48 | 1 |

2/6/13 9:47 AM 18/108

Ultrasound.sav

| | SubW1 | SubW2 | SubW3 | SubW4 |
|---|---|---|---|---|
| 1 | . | . | . | . |
| 2 | 3 | 2.75 | 2.4600 | 2.45 |
| 3 | 3 | 2.40 | 2.2800 | 2.18 |
| 4 | . | . | . | . |
| 5 | 2 | 1.95 | 1.9500 | 1.70 |
| 6 | 2 | 1.65 | 1.8000 | 1.93 |
| 7 | 2 | 2.38 | 2.2300 | 2.05 |
| 8 | . | . | . | . |
| 9 | 3 | 2.35 | 2.3100 | 2.25 |
| 10 | 2 | 2.25 | 2.4000 | 2.13 |
| 11 | 2 | 1.73 | 1.4500 | 1.90 |
| 12 | 2 | 1.40 | 1.6800 | 1.38 |
| 13 | 2 | 2.18 | 2.0300 | 2.15 |
| 14 | 2 | 2.05 | . | . |
| 15 | . | . | . | . |
| 16 | 2 | 1.70 | 2.1100 | 1.93 |
| 17 | 2 | 1.83 | 2.1800 | 2.00 |
| 18 | . | . | . | . |
| 19 | 3 | 2.81 | 2.5800 | 2.63 |
| 20 | 2 | 1.90 | 2.0500 | 2.00 |
| 21 | 2 | 2.05 | 2.0300 | 2.13 |
| 22 | 2 | 2.10 | 2.3000 | 1.83 |
| 23 | 2 | . | . | . |
| 24 | 2 | 1.58 | 1.6500 | 1.85 |
| 25 | 2 | 2.45 | 2.3800 | 2.45 |
| 26 | 2 | 2.08 | 1.6800 | 2.03 |
| 27 | 1 | 1.40 | 1.4800 | 1.58 |
| 28 | . | . | . | . |
| 29 | 2 | 1.45 | 2.0000 | 1.90 |
| 30 | 1 | 1.28 | 0.9000 | 1.43 |
| 31 | 1 | 1.05 | 0.9500 | 1.25 |
| 32 | 2 | 1.50 | 1.6500 | 1.35 |
| 33 | 3 | 3.05 | 2.0300 | 1.88 |
| 34 | 1 | 1.58 | 2.0500 | 1.55 |
| 35 | 1 | 1.40 | 1.9000 | 1.20 |

2/6/13 9:47 AM 19/108

Ultrasound.sav

| | SubW5 | SubW6 | SubW7 | SubW8 |
|---|---|---|---|---|
| 1 | . | . | . | . |
| 2 | 2.25 | 2.50 | 2.1 | 2.26 |
| 3 | 2.03 | 1.55 | 1.8 | 1.43 |
| 4 | . | . | . | . |
| 5 | 2.30 | 1.78 | 1.6 | 2.00 |
| 6 | 1.52 | 1.45 | 1.6 | 1.68 |
| 7 | 1.85 | 1.88 | 2.0 | 1.98 |
| 8 | . | . | . | . |
| 9 | 2.38 | 2.25 | 2.4 | 2.10 |
| 10 | 2.05 | 2.18 | 2.2 | 2.60 |
| 11 | 1.75 | 1.85 | 1.7 | 1.95 |
| 12 | 1.68 | 1.63 | 1.8 | 1.80 |
| 13 | 2.15 | 1.93 | 1.9 | 2.15 |
| 14 | . | . | . | . |
| 15 | . | . | . | . |
| 16 | 2.05 | 1.93 | 2.3 | 2.08 |
| 17 | 2.08 | 2.00 | 2.0 | 1.78 |
| 18 | . | . | . | . |
| 19 | . | . | . | . |
| 20 | 1.90 | 2.05 | 2.2 | 1.95 |
| 21 | 2.25 | 2.38 | 2.4 | 2.38 |
| 22 | 2.18 | 1.93 | 2.3 | 1.55 |
| 23 | . | . | . | . |
| 24 | 1.83 | 1.83 | 2.0 | 2.38 |
| 25 | 2.40 | 2.43 | 2.2 | . |
| 26 | 2.08 | 2.08 | 2.3 | 2.45 |
| 27 | 1.43 | 1.48 | 1.5 | 1.68 |
| 28 | . | . | . | . |
| 29 | 1.95 | 1.90 | 1.3 | 1.28 |
| 30 | 1.53 | 1.08 | 1.2 | 1.00 |
| 31 | 1.55 | 1.58 | 1.1 | 1.38 |
| 32 | 1.30 | . | . | . |
| 33 | 1.98 | 1.98 | 1.9 | 2.18 |
| 34 | 1.78 | 1.45 | 1.5 | 1.30 |
| 35 | 1.63 | 1.30 | 1.6 | 0.93 |

2/6/13 9:47 AM 20/108

Ultrasound.sav

| | SUBPOST | FAT | @50QPRE1_B | @50QuadPre2_/ | @50Qw1 |
|---|---|---|---|---|---|
| 1 | . | . | . | . | . |
| 2 | 1.5 | . | . | 0.8000 | 0.95 |
| 3 | 1.6 | . | . | 0.9000 | 1.05 |
| 4 | . | . | . | . | . |
| 5 | 1.8 | . | . | 2.0000 | 2.03 |
| 6 | 1.5 | . | . | 1.5000 | 1.55 |
| 7 | 1.9 | . | . | 1.7500 | 1.68 |
| 8 | . | . | . | . | . |
| 9 | 1.3 | . | . | 1.5500 | 1.63 |
| 10 | 1.8 | . | . | 2.0500 | 2.43 |
| 11 | 1.8 | . | . | 2.1000 | 2.25 |
| 12 | 1.4 | . | . | 0.7000 | 0.80 |
| 13 | 1.9 | . | . | 1.2300 | 1.20 |
| 14 | . | . | . | 1.4000 | 2.00 |
| 15 | . | . | . | . | . |
| 16 | 2.2 | . | . | 2.6500 | 2.80 |
| 17 | 1.9 | . | . | 2.3300 | 2.63 |
| 18 | . | . | . | . | . |
| 19 | . | . | . | 1.1800 | 1.53 |
| 20 | 2.1 | . | . | 3.3300 | 3.25 |
| 21 | 2.4 | . | . | 1.6300 | 1.78 |
| 22 | 1.5 | . | . | 2.1800 | 2.40 |
| 23 | . | . | . | 3.0500 | 3.23 |
| 24 | 1.5 | . | . | 2.8500 | 2.40 |
| 25 | . | . | . | 2.0800 | 1.98 |
| 26 | 2.5 | . | . | 0.9000 | 1.10 |
| 27 | 1.5 | . | . | 2.0300 | 2.08 |
| 28 | . | . | . | . | . |
| 29 | 1.6 | . | 1.4 | 1.4500 | 1.30 |
| 30 | 1.3 | . | 3.3 | 3.0500 | 3.30 |
| 31 | 1.5 | . | 1.6 | 1.7800 | 1.85 |
| 32 | . | . | 1.7 | 1.2300 | 1.38 |
| 33 | 2.6 | . | 3.6 | 3.1300 | 3.28 |
| 34 | 1.3 | . | 1.8 | 1.7500 | 1.68 |
| 35 | 1.1 | . | 1.8 | 2.0300 | 2.23 |

2/6/13 9:47 AM 21/108

Ultrasound.sav

| | @50Qw2_A | @50Qw3_A | @50Gw4 | @50Qw5_A |
|---|---|---|---|---|
| 1 | . | . | . | . |
| 2 | 0.8500 | 0.9800 | 0.95 | 0.8800 |
| 3 | 0.9800 | 1.1000 | 1.15 | 1.1800 |
| 4 | . | . | . | . |
| 5 | 1.7800 | 1.8000 | 1.80 | 1.8000 |
| 6 | 1.7800 | 1.6300 | 1.53 | 1.5000 |
| 7 | 1.7800 | 1.7000 | 1.85 | 1.7800 |
| 8 | . | . | . | . |
| 9 | 1.6500 | 1.6800 | 1.65 | 1.7000 |
| 10 | 2.3800 | 2.4300 | 2.28 | 2.2000 |
| 11 | 2.0000 | 2.1500 | 2.05 | 1.9300 |
| 12 | 0.7300 | 0.6000 | 0.68 | 0.5700 |
| 13 | 1.2700 | 1.2800 | 1.23 | 1.2500 |
| 14 | 1.5300 | . | . | . |
| 15 | . | . | . | . |
| 16 | 2.6500 | 2.6500 | 2.83 | 2.9500 |
| 17 | 2.8500 | 2.7500 | 2.48 | 2.3800 |
| 18 | . | . | . | . |
| 19 | 1.2500 | 1.2500 | 1.13 | . |
| 20 | 3.3000 | 3.1000 | 3.05 | 3.0800 |
| 21 | 1.8500 | 1.7000 | 1.95 | 1.5300 |
| 22 | 2.5300 | 2.3300 | 2.20 | 2.3000 |
| 23 | . | . | . | . |
| 24 | 2.5800 | 2.6000 | 2.08 | 2.0500 |
| 25 | 1.7500 | 1.9000 | 2.00 | 1.9300 |
| 26 | 0.8300 | 1.1000 | 0.70 | 0.9300 |
| 27 | 2.2800 | 2.2500 | 2.20 | 2.0800 |
| 28 | . | . | . | . |
| 29 | 1.3500 | 1.3000 | 1.25 | 1.3800 |
| 30 | 3.1000 | 2.8300 | 3.20 | 3.0000 |
| 31 | 1.7500 | 1.4800 | 1.68 | 1.6200 |
| 32 | 1.5200 | 1.3300 | 1.33 | 1.0800 |
| 33 | 2.8300 | 3.1000 | 2.80 | 2.5000 |
| 34 | 1.8800 | 1.6500 | 1.65 | 1.4000 |
| 35 | 2.3000 | 2.1800 | 1.85 | 1.9000 |

2/6/13 9:47 AM 22/108

Ultrasound.sav

| | @50Qw6_A | @50Qw7_A | @50Qw8_A | @50QPOST_A |
|---|---|---|---|---|
| 1 | . | . | . | . |
| 2 | 0.85 | 0.9 | 0.7300 | 0.7300 |
| 3 | 1.18 | 1.1 | 0.9000 | 1.0000 |
| 4 | . | . | . | . |
| 5 | 2.28 | 1.7 | 1.5200 | 1.8000 |
| 6 | 1.50 | 1.5 | 1.5800 | 1.4800 |
| 7 | 1.68 | 1.8 | 1.8300 | 1.6500 |
| 8 | . | . | . | . |
| 9 | 1.78 | 1.8 | 1.6500 | 1.5200 |
| 10 | 2.18 | 2.1 | 2.0500 | 2.0800 |
| 11 | 1.88 | 2.0 | 2.0300 | 1.9300 |
| 12 | 0.68 | 0.7 | 0.5500 | 0.5300 |
| 13 | 1.35 | 1.3 | 1.1000 | 1.0000 |
| 14 | . | . | . | . |
| 15 | . | . | . | . |
| 16 | 2.83 | 3.0 | 2.6000 | 2.5800 |
| 17 | 2.43 | 2.5 | 2.3500 | 2.1800 |
| 18 | . | . | . | . |
| 19 | . | . | . | . |
| 20 | 3.20 | 3.3 | 3.2300 | 3.3800 |
| 21 | 1.73 | 1.8 | 1.6300 | 1.4000 |
| 22 | 2.38 | 2.3 | 2.0500 | 2.4500 |
| 23 | . | . | . | . |
| 24 | 2.08 | 2.1 | 2.0500 | 2.1500 |
| 25 | 1.83 | 1.8 | . | . |
| 26 | 1.00 | 0.9 | 0.7000 | 0.7300 |
| 27 | 2.08 | 1.9 | 1.7500 | 2.0000 |
| 28 | . | . | . | . |
| 29 | 1.33 | 1.3 | 1.1500 | 1.1500 |
| 30 | 3.05 | 2.9 | 2.7800 | 2.6500 |
| 31 | 1.53 | 1.4 | 1.2500 | 1.2300 |
| 32 | . | . | . | . |
| 33 | 2.83 | 2.7 | 2.9800 | 2.8500 |
| 34 | 1.48 | 1.5 | 1.4300 | 1.4500 |
| 35 | 1.88 | 1.6 | 1.8800 | 1.8700 |

2/6/13 9:47 AM 23/108

Ultrasound.sav

| | @70QPRE1_B | @70QuadPre2_A | @70Qw1_A | @70Qw2_A |
|---|---|---|---|---|
| 1 | . | . | . | . |
| 2 | . | 1 | 0.82 | 0.8200 |
| 3 | . | 1 | 1.05 | 1.0800 |
| 4 | . | . | . | . |
| 5 | . | 2 | 1.52 | 1.6500 |
| 6 | . | 1 | 1.48 | 1.4300 |
| 7 | . | 2 | 2.03 | 1.5800 |
| 8 | . | . | . | . |
| 9 | . | 2 | 1.50 | 1.4500 |
| 10 | . | 2 | 1.48 | 1.4000 |
| 11 | . | 2 | 1.88 | 1.6300 |
| 12 | . | 1 | 0.60 | 0.6500 |
| 13 | . | 1 | 0.88 | 0.8500 |
| 14 | . | 1 | 1.45 | 1.3800 |
| 15 | . | . | . | . |
| 16 | . | 3 | 2.40 | 2.5500 |
| 17 | . | 3 | 3.40 | 2.8000 |
| 18 | . | . | . | . |
| 19 | . | 1 | 1.73 | 1.3300 |
| 20 | . | 3 | 2.60 | 2.5800 |
| 21 | . | 1 | 1.75 | 1.6800 |
| 22 | . | 2 | 1.98 | 1.9500 |
| 23 | . | 3 | 2.58 | . |
| 24 | . | 2 | 2.00 | 2.1300 |
| 25 | . | 2 | 1.80 | 1.7300 |
| 26 | . | 1 | 0.45 | 0.8000 |
| 27 | . | 2 | 2.03 | 2.1000 |
| 28 | . | . | . | . |
| 29 | 1.23 | 1 | 1.38 | 1.1500 |
| 30 | 2.58 | 3 | 3.00 | 2.8500 |
| 31 | 1.10 | 1 | 1.40 | 1.4500 |
| 32 | 1.10 | 1 | 1.38 | 1.3300 |
| 33 | 3.13 | 3 | 3.75 | 3.4800 |
| 34 | 1.55 | 2 | 1.48 | 1.5300 |
| 35 | 1.70 | 2 | 1.87 | 1.9000 |

2/6/13 9:47 AM 24/108

Ultrasound.sav

| | @70Qw3_A | @70Qw4_A | @70Qw5_A | @70Qw6_A |
|---|---|---|---|---|
| 1 | . | . | . | . |
| 2 | 0.6800 | 0.6500 | 0.8000 | 0.63 |
| 3 | 1.1300 | 1.3000 | 0.9800 | 1.10 |
| 4 | . | . | . | . |
| 5 | 1.6000 | 1.6500 | 1.5500 | 1.93 |
| 6 | 1.3500 | 1.3300 | 1.2000 | 1.27 |
| 7 | 1.7300 | 1.7800 | 1.7000 | 1.73 |
| 8 | . | . | . | . |
| 9 | 1.4300 | 1.5500 | 1.5000 | 1.48 |
| 10 | 1.6000 | 1.8000 | 1.5800 | 1.50 |
| 11 | 1.6300 | 1.5300 | 1.6300 | 1.38 |
| 12 | 0.6500 | 0.5500 | 0.5700 | 0.50 |
| 13 | 0.9000 | 0.8500 | 1.1300 | 0.78 |
| 14 | . | . | . | . |
| 15 | . | . | . | . |
| 16 | 2.3000 | 1.9300 | 2.1800 | 2.10 |
| 17 | 2.6300 | 2.5300 | 2.5500 | 2.20 |
| 18 | . | . | . | . |
| 19 | 1.1000 | 0.8500 | . | . |
| 20 | 2.6500 | 2.4800 | 2.6000 | 2.65 |
| 21 | 1.7500 | 1.7000 | 1.8300 | 1.73 |
| 22 | 2.0100 | 1.8800 | 1.9300 | 1.93 |
| 23 | . | . | . | . |
| 24 | 2.1500 | 1.8800 | 2.0300 | 1.88 |
| 25 | 1.6800 | 1.6800 | 1.6000 | 1.53 |
| 26 | 0.7800 | 0.4000 | 0.6000 | 0.70 |
| 27 | 1.7500 | 1.9000 | 1.7800 | 1.65 |
| 28 | . | . | . | . |
| 29 | 1.1800 | 1.4300 | 1.2800 | 0.98 |
| 30 | 2.7300 | 2.7300 | 2.6800 | 2.83 |
| 31 | 1.3500 | 1.8800 | 1.5000 | 1.53 |
| 32 | 1.2800 | 1.1800 | 1.3300 | . |
| 33 | 3.1800 | 2.8000 | 3.0500 | 2.55 |
| 34 | 1.5000 | 1.1800 | 1.3000 | 1.58 |
| 35 | 1.9000 | 1.6800 | 1.4300 | 1.55 |

2/6/13 9:47 AM 26/108

Ultrasound.sav

| | @70Qw7_A | @70Qw6_A | @70QPOST_A | @50HPRE1 |
|---|---|---|---|---|
| 1 | . | . | . | . |
| 2 | 0.60 | 0.9 | 0.5 | . |
| 3 | 1.05 | 0.8 | 1.0 | . |
| 4 | . | . | . | . |
| 5 | 0.93 | 0.8 | 1.2 | . |
| 6 | 1.05 | 1.3 | 1.1 | . |
| 7 | 1.73 | 1.7 | 1.7 | . |
| 8 | . | . | . | . |
| 9 | 1.28 | 1.2 | 1.1 | . |
| 10 | 1.68 | 1.7 | 1.5 | . |
| 11 | 1.38 | 1.3 | 1.5 | . |
| 12 | 0.43 | 0.4 | 0.4 | . |
| 13 | 0.85 | 0.7 | 0.6 | . |
| 14 | . | . | . | . |
| 15 | . | . | . | . |
| 16 | 2.03 | 2.3 | 2.1 | . |
| 17 | 2.78 | 2.9 | 3.2 | . |
| 18 | . | . | . | . |
| 19 | . | . | . | . |
| 20 | 2.93 | 2.8 | 2.4 | . |
| 21 | 1.38 | 1.1 | 1.4 | . |
| 22 | 1.93 | 1.7 | 1.8 | . |
| 23 | . | . | . | . |
| 24 | 2.43 | 2.4 | 1.7 | . |
| 25 | 1.50 | . | . | . |
| 26 | 0.53 | 0.5 | 0.3 | . |
| 27 | 1.60 | 1.6 | 1.5 | . |
| 28 | . | . | . | . |
| 29 | 1.08 | 0.9 | 0.9 | 3.2 |
| 30 | 2.58 | 2.7 | 2.5 | 5.0 |
| 31 | 1.35 | 1.3 | 1.3 | 2.5 |
| 32 | . | . | . | 1.4 |
| 33 | 2.85 | 3.0 | 2.9 | 3.7 |
| 34 | 1.25 | 1.3 | 0.9 | 3.4 |
| 35 | 1.28 | 2.4 | 1.4 | 3.6 |

2/6/13 9:47 AM 26/108

Ultrasound.sav

| | @50HamPre2_A | @50Hw1_A | @50Hw2_A | @50Hw3_A |
|---|---|---|---|---|
| 1 | . | . | . | . |
| 2 | 1 | 1.33 | 1.3000 | 1.2000 |
| 3 | 3 | 2.25 | 2.1000 | 1.9300 |
| 4 | . | . | . | . |
| 5 | 2 | 2.75 | 2.2800 | 2.1300 |
| 6 | 3 | 3.40 | 3.2000 | 3.3300 |
| 7 | 3 | 3.03 | 2.7500 | 2.8500 |
| 8 | . | . | . | . |
| 9 | 2 | 2.75 | 2.5800 | 2.7500 |
| 10 | 2 | 2.43 | 2.4800 | 2.4300 |
| 11 | 3 | 3.00 | 2.7800 | 2.6500 |
| 12 | 2 | 2.03 | 1.9800 | 2.0300 |
| 13 | 3 | 2.63 | 2.2300 | 2.1000 |
| 14 | 2 | 1.68 | 1.5500 | . |
| 15 | . | . | . | . |
| 16 | 4 | 3.48 | 3.3500 | 3.4300 |
| 17 | 4 | 3.93 | 3.2000 | 3.6500 |
| 18 | . | . | . | . |
| 19 | 1 | 1.30 | 0.8000 | 0.7500 |
| 20 | 3 | 2.70 | 2.9000 | 2.5000 |
| 21 | 1 | 1.20 | 1.3400 | 1.3300 |
| 22 | 3 | 3.05 | 3.1300 | 3.1500 |
| 23 | 3 | 3.85 | . | . |
| 24 | 3 | 2.95 | 2.8000 | 2.2000 |
| 25 | 3 | 2.90 | 2.9300 | 2.6000 |
| 26 | 2 | 2.00 | 1.9300 | 2.1300 |
| 27 | 2 | 2.30 | 2.4000 | 2.1000 |
| 28 | . | . | . | . |
| 29 | 4 | 3.38 | 3.0000 | 3.0300 |
| 30 | 5 | 4.30 | 4.0300 | 3.8100 |
| 31 | 3 | 3.50 | 3.1300 | 3.3800 |
| 32 | 3 | 3.60 | 3.8500 | 3.6800 |
| 33 | 5 | 4.25 | 4.2500 | 4.4300 |
| 34 | 3 | 2.92 | 3.5000 | 3.3500 |
| 35 | 3 | 2.81 | 3.0000 | 3.4000 |

2/5/13 9:47 AM 27/108

Ultrasound.sav

| | @50Hw4_A | @50Hw5_A | @50Hw6_A | @50Hw7_A |
|---|---|---|---|---|
| 1 | . | . | . | . |
| 2 | 1.38 | 1.4500 | 1.6 | 0.65 |
| 3 | 1.43 | 1.8000 | 1.9 | 1.73 |
| 4 | . | . | . | . |
| 5 | 2.25 | 2.0000 | 2.1 | 1.50 |
| 6 | 3.28 | 3.3500 | 3.5 | 3.03 |
| 7 | 2.85 | 3.1000 | 2.8 | 3.08 |
| 8 | . | . | . | . |
| 9 | 2.80 | 1.3300 | 1.7 | 1.20 |
| 10 | 2.65 | 2.7300 | 3.0 | 3.05 |
| 11 | 2.83 | 2.7500 | 2.7 | 2.45 |
| 12 | 1.98 | 1.6000 | 1.5 | 1.45 |
| 13 | 2.05 | 1.7500 | 1.6 | 1.10 |
| 14 | . | . | . | . |
| 15 | . | . | . | . |
| 16 | 3.60 | 3.5500 | 4.1 | 4.43 |
| 17 | 3.23 | 3.3500 | 3.3 | 3.55 |
| 18 | . | . | . | . |
| 19 | 1.28 | . | . | . |
| 20 | 2.93 | 2.9500 | 2.9 | 3.00 |
| 21 | 1.23 | 1.2500 | 1.2 | 1.20 |
| 22 | 3.00 | 3.1500 | 3.2 | 3.10 |
| 23 | . | . | . | . |
| 24 | 2.50 | 2.4800 | 2.7 | 2.70 |
| 25 | 2.70 | 2.5500 | 2.3 | 2.48 |
| 26 | 1.90 | 2.0500 | 1.6 | 1.50 |
| 27 | 2.18 | 2.3300 | 2.1 | 2.08 |
| 28 | . | . | . | . |
| 29 | 3.08 | 3.1500 | 2.6 | 2.78 |
| 30 | 4.20 | 3.1800 | 4.1 | 4.23 |
| 31 | 2.88 | 2.9300 | 2.9 | 2.85 |
| 32 | 4.12 | . | . | . |
| 33 | 4.30 | 4.6800 | 4.1 | 4.33 |
| 34 | 3.18 | 2.7500 | 2.0 | 3.05 |
| 35 | 3.20 | 3.3300 | 3.0 | 3.06 |

2/6/13 9:47 AM 28/108

Ultrasound.sav

| | @50Hw8_A | @50HPOST_A | @70HPRE1 | @70HamPre2_A |
|---|---|---|---|---|
| 1 | . | . | . | . |
| 2 | 0.93 | 0.9800 | . | 0.7300 |
| 3 | 1.93 | 1.2300 | . | 0.7300 |
| 4 | . | . | . | . |
| 5 | 1.50 | 1.7700 | . | 1.8600 |
| 6 | 3.13 | 2.8500 | . | 2.2300 |
| 7 | 3.43 | 2.9800 | . | 1.7000 |
| 8 | . | . | . | . |
| 9 | 1.00 | 1.0800 | . | 1.6500 |
| 10 | 3.15 | 3.0000 | . | 1.1800 |
| 11 | 2.30 | 2.2500 | . | 1.6000 |
| 12 | 1.58 | 1.5000 | . | 1.3300 |
| 13 | 1.10 | 1.6300 | . | 1.1000 |
| 14 | . | . | . | 1.4800 |
| 15 | . | . | . | . |
| 16 | 4.35 | 4.1500 | . | 2.6800 |
| 17 | 3.45 | 3.2300 | . | 3.0000 |
| 18 | . | . | . | . |
| 19 | . | . | . | 1.3300 |
| 20 | 2.90 | 3.3500 | . | 1.7500 |
| 21 | 1.10 | 1.1200 | . | 1.3300 |
| 22 | 2.85 | 2.9300 | . | 1.8000 |
| 23 | . | . | . | 2.7300 |
| 24 | 2.73 | 2.5800 | . | 1.8000 |
| 25 | . | . | . | 2.2500 |
| 26 | 1.28 | 1.4300 | . | 0.9300 |
| 27 | 1.83 | 1.5200 | . | 1.8300 |
| 28 | . | . | . | . |
| 29 | 2.23 | 2.5300 | 1.43 | 1.7300 |
| 30 | 4.73 | 4.6000 | 3.15 | 2.8500 |
| 31 | 3.05 | 3.1300 | 1.45 | 2.0300 |
| 32 | . | . | 1.10 | 1.7300 |
| 33 | 4.53 | 4.3500 | 2.95 | 3.1000 |
| 34 | 2.43 | 2.3300 | 1.83 | 1.8300 |
| 35 | 2.31 | 2.3400 | 2.45 | 2.2800 |

2/6/13 9:47 AM 29/108

Ultrasound.sav

| | @70Hw1_A | @70Hw2_A | @70Hw3_A | @70Hw4_A |
|---|---|---|---|---|
| 1 | . | . | . | . |
| 2 | 0.8800 | 0.8000 | 0.68 | 0.7800 |
| 3 | 0.6300 | 0.9300 | 1.15 | 1.2000 |
| 4 | . | . | . | . |
| 5 | 2.1300 | 2.0000 | 2.23 | 2.1500 |
| 6 | 1.9000 | 2.1300 | 1.73 | 1.5300 |
| 7 | 2.3000 | 2.1800 | 2.05 | 2.0800 |
| 8 | . | . | . | . |
| 9 | 2.2300 | 2.2300 | 2.35 | 2.2500 |
| 10 | 1.5800 | 1.2700 | 1.28 | 1.2300 |
| 11 | 1.8500 | 1.8500 | 1.70 | 1.6800 |
| 12 | 1.5500 | 1.5200 | 1.43 | 1.3500 |
| 13 | 1.7500 | 1.0000 | 1.15 | 0.9300 |
| 14 | 1.5500 | 1.4500 | . | . |
| 15 | . | . | . | . |
| 16 | 2.7000 | 2.5800 | 2.26 | 2.5300 |
| 17 | 3.2000 | 2.5800 | 2.90 | 2.5500 |
| 18 | . | . | . | . |
| 19 | 1.1000 | 0.6000 | 1.03 | 1.1000 |
| 20 | 1.8000 | 1.6800 | 1.83 | 1.8500 |
| 21 | 1.6800 | 1.1000 | 1.03 | 1.1200 |
| 22 | 2.1300 | 1.8800 | 1.78 | 1.7500 |
| 23 | 2.3500 | . | . | . |
| 24 | 1.9000 | 2.0800 | 1.95 | 1.6200 |
| 25 | 2.4300 | 2.4500 | 2.33 | 2.3300 |
| 26 | 1.0200 | 1.0800 | 1.10 | 1.1000 |
| 27 | 2.2500 | 2.0500 | 1.50 | 1.8600 |
| 28 | . | . | . | . |
| 29 | 1.2500 | 1.5200 | 1.25 | 1.2800 |
| 30 | 3.0000 | 2.8500 | 1.93 | 2.4800 |
| 31 | 2.3000 | 1.5000 | 1.73 | 1.6000 |
| 32 | 1.8500 | 1.8000 | 1.88 | 2.2000 |
| 33 | 3.0300 | 3.3500 | 2.65 | 2.7800 |
| 34 | 1.8500 | 1.7800 | 1.85 | 2.0500 |
| 35 | 1.0800 | 2.5500 | 2.75 | 2.6300 |

2/6/13 9:47 AM 30/108

Unfiled Notes Page 30

| | @70Hw5_A | @70Hw6_A | @70Hw7_A | @70Hw8_A |
|---|---|---|---|---|
| 1 | . | . | . | . |
| 2 | 0.78 | 0.8 | 0.58 | 0.68 |
| 3 | 1.28 | 0.7 | 1.20 | 1.20 |
| 4 | . | . | . | . |
| 5 | 2.33 | 2.3 | 2.13 | 1.75 |
| 6 | 1.65 | 1.6 | 1.73 | 1.43 |
| 7 | 2.10 | 2.1 | 2.25 | 1.95 |
| 8 | . | . | . | . |
| 9 | 1.78 | 1.5 | 1.40 | 1.33 |
| 10 | 1.33 | 1.2 | 1.20 | 1.40 |
| 11 | 1.63 | 1.6 | 1.27 | 1.25 |
| 12 | 1.45 | 1.5 | 1.38 | 1.30 |
| 13 | 0.73 | 0.7 | 0.65 | 0.60 |
| 14 | . | . | . | . |
| 15 | . | . | . | . |
| 16 | 2.68 | 3.0 | 2.40 | 2.60 |
| 17 | 2.91 | 3.2 | 3.38 | 3.43 |
| 18 | . | . | . | . |
| 19 | . | . | . | . |
| 20 | 1.85 | 1.7 | 1.80 | 1.60 |
| 21 | 1.10 | 1.0 | 0.95 | 0.93 |
| 22 | 1.93 | 1.7 | 1.90 | 2.25 |
| 23 | . | . | . | . |
| 24 | 1.63 | 1.9 | 2.00 | 2.15 |
| 25 | 2.28 | 2.0 | 2.13 | . |
| 26 | 1.23 | 1.0 | 0.75 | 0.70 |
| 27 | 1.85 | 1.7 | 1.63 | 1.62 |
| 28 | . | . | . | . |
| 29 | 1.25 | 1.2 | 1.18 | 1.53 |
| 30 | 2.45 | 2.6 | 2.65 | 2.43 |
| 31 | 2.05 | 2.0 | 1.78 | 1.63 |
| 32 | 2.38 | . | . | . |
| 33 | 2.95 | 2.6 | 2.60 | 2.70 |
| 34 | 2.13 | 1.6 | 1.95 | 2.13 |
| 35 | 2.40 | 2.4 | 1.93 | 1.83 |

2/6/13 9:47 AM 31/108

Ultrasound.sav

| | @70HPOST_A | DeltPRE1_A | DeltoidPre2_A | DeltW1_A |
|---|---|---|---|---|
| 1 | . | . | . | . |
| 2 | 0.7 | . | 0.4000 | 0.4700 |
| 3 | 0.9 | . | 0.1500 | 0.1500 |
| 4 | . | . | . | . |
| 5 | 2.0 | . | 0.9500 | 0.9500 |
| 6 | 1.1 | . | 0.2300 | 0.3000 |
| 7 | 1.7 | . | 0.6300 | 1.0300 |
| 8 | . | . | . | . |
| 9 | 1.5 | . | 0.7000 | 0.9800 |
| 10 | 1.2 | . | 0.9800 | 1.1000 |
| 11 | 1.4 | . | 2.7300 | 2.1000 |
| 12 | 1.2 | . | 0.4700 | 0.6200 |
| 13 | 0.7 | . | 0.2500 | 0.3800 |
| 14 | . | . | 0.3800 | 0.5500 |
| 15 | . | . | . | . |
| 16 | 1.9 | . | 0.9800 | 1.3000 |
| 17 | 3.5 | . | 1.1000 | 1.0500 |
| 18 | . | . | . | . |
| 19 | . | . | 0.8000 | 0.9500 |
| 20 | 1.9 | . | 1.5500 | 1.8500 |
| 21 | 0.7 | . | 2.3300 | 2.5800 |
| 22 | 2.1 | . | 2.1000 | 2.2500 |
| 23 | . | . | 1.5800 | 1.9500 |
| 24 | 2.0 | . | 1.2000 | 1.5000 |
| 25 | . | . | 1.0300 | 1.1300 |
| 26 | 0.9 | . | 0.8800 | 0.7500 |
| 27 | 1.5 | . | 0.4700 | 0.7000 |
| 28 | . | . | . | . |
| 29 | 1.4 | 1.05 | 1.1500 | 0.8800 |
| 30 | 2.2 | 0.95 | 1.0000 | 0.6800 |
| 31 | 1.3 | 0.95 | 0.7000 | 0.8800 |
| 32 | . | 1.30 | 1.2500 | 1.3800 |
| 33 | 2.6 | 0.88 | 1.0800 | 1.0500 |
| 34 | 1.8 | 0.78 | 0.6800 | 0.8500 |
| 35 | 1.9 | 1.13 | 1.0500 | 1.1000 |

2/5/13 9:47 AM 32/108

Ultrasound.sav

| | DeltW2_A | DeltW3_A | DeltW4_A | DeltW5_A |
|---|---|---|---|---|
| 1 | . | . | . | . |
| 2 | 0.5300 | 0.3500 | 0.5300 | 0.6000 |
| 3 | 0.2000 | 0.2800 | 0.2500 | 0.2000 |
| 4 | . | . | . | . |
| 5 | 0.8000 | 0.9800 | 1.0800 | 0.7800 |
| 6 | 0.3500 | 0.3800 | 0.4000 | 0.4300 |
| 7 | 1.0300 | 0.8300 | 1.0300 | 0.8000 |
| 8 | . | . | . | . |
| 9 | 1.0800 | 1.0500 | 1.0500 | 1.1000 |
| 10 | 1.1500 | 1.2100 | 1.2000 | 1.0500 |
| 11 | 2.3500 | 2.4500 | 2.5000 | 2.3800 |
| 12 | 0.6200 | 0.4500 | 0.4000 | 0.3300 |
| 13 | 0.3800 | 0.2300 | 0.1500 | 0.2300 |
| 14 | 0.5000 | . | . | . |
| 15 | . | . | . | . |
| 16 | 1.5800 | 1.0000 | 1.3500 | 1.3300 |
| 17 | 1.3800 | 1.4000 | 1.6800 | 2.3000 |
| 18 | . | . | . | . |
| 19 | 1.0300 | 1.0500 | 1.1800 | . |
| 20 | 1.8800 | 1.9300 | 1.4000 | 1.9000 |
| 21 | 2.6500 | 2.7800 | 2.4300 | 2.6300 |
| 22 | 2.2300 | 2.2300 | 2.4000 | 2.1000 |
| 23 | . | . | . | . |
| 24 | 1.4000 | 1.2300 | 1.2700 | 1.2800 |
| 25 | 1.1800 | 1.1600 | 1.2000 | 1.0500 |
| 26 | 1.0000 | 0.7800 | 0.6500 | 0.5300 |
| 27 | 0.5500 | 0.4500 | 0.5500 | 0.5300 |
| 28 | . | . | . | . |
| 29 | 0.8000 | 0.8800 | 0.9500 | 1.1500 |
| 30 | 1.3000 | 1.0300 | 0.8000 | 0.8500 |
| 31 | 0.7500 | 0.7800 | 0.8000 | 0.8300 |
| 32 | 1.2300 | 1.1500 | 1.3800 | 1.4500 |
| 33 | 1.0200 | 0.8800 | 1.1300 | 0.9300 |
| 34 | 0.7000 | 0.5000 | 0.8500 | 0.6800 |
| 35 | 0.9000 | 1.0000 | 0.8200 | 0.8300 |

2/6/13 9:47 AM

33/108

Ultrasound.sav

| | DeltW6_A | DeltW7_A | DeltW8_A | DELTPOST_A |
|---|---|---|---|---|
| 1 | . | . | . | . |
| 2 | 0.50 | 0.40 | 0.33 | 0.3300 |
| 3 | 0.18 | 0.17 | 0.11 | 0.1500 |
| 4 | . | . | . | . |
| 5 | 1.00 | 0.88 | 0.90 | 1.0200 |
| 6 | 0.60 | 0.57 | 0.45 | 0.5300 |
| 7 | 0.78 | 0.83 | 0.65 | 0.5800 |
| 8 | . | . | . | . |
| 9 | 1.40 | 1.18 | 1.30 | 0.9500 |
| 10 | 1.08 | 1.12 | 0.85 | 0.8000 |
| 11 | 2.45 | 2.25 | 2.20 | 2.2000 |
| 12 | 0.45 | 0.53 | 0.50 | 0.4700 |
| 13 | 0.43 | 0.40 | 0.33 | 0.1500 |
| 14 | . | . | . | . |
| 15 | . | . | . | . |
| 16 | 1.33 | 1.35 | 1.40 | 1.1000 |
| 17 | 2.05 | 2.05 | 1.65 | 1.5200 |
| 18 | . | . | . | . |
| 19 | . | . | . | . |
| 20 | 2.00 | 2.05 | 2.00 | 1.8000 |
| 21 | 2.38 | 2.48 | 2.43 | 2.3000 |
| 22 | 2.28 | 2.45 | 1.95 | 2.3000 |
| 23 | . | . | . | . |
| 24 | 1.43 | 1.38 | 1.15 | 1.1000 |
| 25 | 1.23 | 0.80 | . | . |
| 26 | 0.78 | 0.82 | 0.70 | 0.5500 |
| 27 | 0.43 | 0.56 | 0.45 | 0.5000 |
| 28 | . | . | . | . |
| 29 | 1.43 | 1.18 | 0.93 | 1.1300 |
| 30 | 0.88 | 1.05 | 0.73 | 0.9000 |
| 31 | 0.70 | 0.73 | 0.73 | 0.8500 |
| 32 | . | . | . | . |
| 33 | 1.13 | 0.80 | 0.88 | 0.9500 |
| 34 | 0.70 | 0.65 | 0.48 | 0.8000 |
| 35 | 0.95 | 1.23 | 0.82 | 0.8300 |

2/6/13 9:47 AM 34/108

Ultrasound.sav

| | ChestPRE1_A | ChestPre2_A | ChestW1_A | ChestW2_A |
|---|---|---|---|---|
| 1 | . | . | . | . |
| 2 | . | 0.1500 | 0.3000 | 0.2000 |
| 3 | . | 0.3500 | 0.2300 | 0.1200 |
| 4 | . | . | . | . |
| 5 | . | 0.3800 | 0.1500 | 0.3000 |
| 6 | . | 0.4300 | 0.2800 | 0.3000 |
| 7 | . | 0.8300 | 0.6800 | 0.7000 |
| 8 | . | . | . | . |
| 9 | . | 0.5000 | 0.4300 | 0.6000 |
| 10 | . | 0.4000 | 0.3500 | 0.4000 |
| 11 | . | 1.2000 | 1.0200 | 1.2500 |
| 12 | . | 0.2300 | 0.3500 | 0.2300 |
| 13 | . | 0.2300 | 0.2000 | 0.2300 |
| 14 | . | 0.2500 | 0.1500 | 0.2300 |
| 15 | . | . | . | . |
| 16 | . | 1.9500 | 1.8500 | 1.6000 |
| 17 | . | 0.6000 | 0.7500 | 0.9500 |
| 18 | . | . | . | . |
| 19 | . | 0.7000 | 0.9000 | 0.9800 |
| 20 | . | 1.2300 | 0.9300 | 1.1800 |
| 21 | . | 1.3000 | 0.9800 | 1.0500 |
| 22 | . | 1.0300 | 0.9800 | 0.9800 |
| 23 | . | 0.6000 | 0.5500 | . |
| 24 | . | 0.7500 | 0.6300 | 0.8000 |
| 25 | . | 0.8000 | 0.7300 | 0.6800 |
| 26 | . | 0.3800 | 0.2300 | 0.4000 |
| 27 | . | 0.2000 | 0.2500 | 0.2300 |
| 28 | . | . | . | . |
| 29 | 0.25 | 0.4300 | 0.2300 | 0.2000 |
| 30 | 0.35 | 0.3500 | 0.3500 | 0.3300 |
| 31 | 0.53 | 0.7000 | 0.6800 | 0.5000 |
| 32 | 0.98 | 0.9000 | 0.8000 | 1.6000 |
| 33 | 0.60 | 0.7800 | 0.7500 | 0.7500 |
| 34 | 0.18 | 0.2500 | 0.1700 | 0.4500 |
| 35 | 0.70 | 0.6000 | 0.1100 | 0.6800 |

Ultrasound.sav

| | ChestW3_A | ChestW4_A | ChestW5_A | ChestW6_A |
|---|---|---|---|---|
| 1 | . | . | . | . |
| 2 | 0.20 | 0.2000 | 0.1700 | 0.17 |
| 3 | 0.28 | 0.3500 | 0.2300 | 0.15 |
| 4 | . | . | . | . |
| 5 | 0.10 | 0.3800 | 0.3800 | 0.28 |
| 6 | 0.10 | 0.2500 | 0.2000 | 0.20 |
| 7 | 0.45 | 0.7500 | 0.4500 | 0.38 |
| 8 | . | . | . | . |
| 9 | 0.43 | 0.5300 | 0.5800 | 0.40 |
| 10 | 0.35 | 0.4000 | 0.3800 | 0.35 |
| 11 | 1.15 | 1.2500 | 1.2000 | 1.25 |
| 12 | 0.23 | 0.2300 | 0.2000 | 0.28 |
| 13 | 0.33 | 0.2300 | 0.1800 | 0.25 |
| 14 | . | . | . | . |
| 15 | . | . | . | . |
| 16 | 0.98 | 0.4500 | 0.6500 | 0.25 |
| 17 | 0.63 | 0.9000 | 0.8000 | 0.65 |
| 18 | . | . | . | . |
| 19 | 0.82 | 0.7800 | . | . |
| 20 | 1.03 | 1.1300 | 1.1000 | 1.05 |
| 21 | 1.20 | 1.2000 | 1.3500 | 0.63 |
| 22 | 1.13 | 1.1300 | 0.9000 | 0.25 |
| 23 | . | . | . | . |
| 24 | 0.86 | 0.5800 | 0.5800 | 0.75 |
| 25 | 0.62 | 0.7300 | 0.7500 | 0.38 |
| 26 | 0.50 | 0.4300 | 0.4700 | 0.38 |
| 27 | 0.25 | 0.2000 | 0.1800 | 0.23 |
| 28 | . | . | . | . |
| 29 | 1.08 | 0.8300 | 0.4000 | 0.65 |
| 30 | 0.28 | 0.2800 | 0.4300 | 0.35 |
| 31 | 0.48 | 0.8300 | 0.6000 | 0.68 |
| 32 | 1.00 | 0.8500 | 0.6500 | . |
| 33 | 0.73 | 0.5500 | 0.7800 | 0.70 |
| 34 | 0.23 | 0.2500 | 0.2800 | 0.30 |
| 35 | 0.53 | 0.6200 | 0.6500 | 0.75 |

Ultrasound.sav

| | ChestW7_A | ChestW8_A | CHESTPOST_A | SubPRE1_A |
|---|---|---|---|---|
| 1 | . | . | . | . |
| 2 | 0.18 | 0.3 | 0.2 | . |
| 3 | 0.15 | 0.1 | 0.2 | . |
| 4 | . | . | . | . |
| 5 | 0.33 | 0.4 | 0.6 | . |
| 6 | 0.18 | 0.1 | 0.2 | . |
| 7 | 0.65 | 0.7 | 0.9 | . |
| 8 | . | . | . | . |
| 9 | 0.30 | 0.5 | 0.4 | . |
| 10 | 0.35 | 0.4 | 0.3 | . |
| 11 | 1.23 | 1.1 | 1.2 | . |
| 12 | 0.25 | 0.2 | 0.2 | . |
| 13 | 0.30 | 0.2 | 0.2 | . |
| 14 | . | . | . | . |
| 15 | . | . | . | . |
| 16 | 0.65 | 0.7 | 0.6 | . |
| 17 | 0.63 | 0.7 | 0.6 | . |
| 18 | . | . | . | . |
| 19 | . | . | . | . |
| 20 | 1.15 | 0.9 | 0.8 | . |
| 21 | 0.90 | 0.8 | 1.0 | . |
| 22 | 0.90 | 0.7 | 1.1 | . |
| 23 | . | . | . | . |
| 24 | 0.62 | 0.6 | 0.5 | . |
| 25 | 0.40 | . | . | . |
| 26 | 0.45 | 0.3 | 0.2 | . |
| 27 | 0.23 | 0.2 | 0.1 | . |
| 28 | . | . | . | . |
| 29 | 0.73 | 0.5 | 0.8 | 0.5800 |
| 30 | 0.43 | 0.3 | 0.5 | 0.5700 |
| 31 | 0.68 | 0.6 | 0.6 | 0.7800 |
| 32 | . | . | . | 2.0000 |
| 33 | 0.70 | 0.7 | 0.7 | 2.0500 |
| 34 | 0.18 | 0.1 | 0.2 | 0.4500 |
| 35 | 0.55 | 0.6 | 0.4 | 0.7800 |

Ultrasound.sav

| | SubscapPre2_A | SubW1_A | SubW2_A | SubW3_A |
|---|---|---|---|---|
| 1 | . | . | . | . |
| 2 | 0.3500 | 0 | 0.23 | 0.28 |
| 3 | 0.2500 | 0 | 0.23 | 0.23 |
| 4 | . | . | . | . |
| 5 | 0.7000 | 0 | 0.88 | 0.45 |
| 6 | 0.8500 | 1 | 0.40 | 0.43 |
| 7 | 1.1000 | 2 | 1.00 | 1.00 |
| 8 | . | . | . | . |
| 9 | 1.7300 | 2 | 1.53 | 1.25 |
| 10 | 0.8800 | 1 | 1.03 | 1.08 |
| 11 | 2.2300 | 3 | 1.78 | 1.55 |
| 12 | 0.1700 | 0 | 0.30 | 0.20 |
| 13 | 0.2800 | 0 | 0.35 | 0.45 |
| 14 | 0.8800 | 1 | 0.47 | . |
| 15 | . | . | . | . |
| 16 | 1.3000 | 1 | 0.55 | 0.63 |
| 17 | 2.1300 | 2 | 1.93 | 1.63 |
| 18 | . | . | . | . |
| 19 | 1.2000 | 1 | 1.03 | 1.15 |
| 20 | 1.7000 | 2 | 1.80 | 1.55 |
| 21 | 3.0800 | 4 | 4.08 | 3.50 |
| 22 | 3.2300 | 3 | 2.85 | 3.00 |
| 23 | 1.8300 | 2 | . | . |
| 24 | 2.1000 | 2 | 1.73 | 1.48 |
| 25 | 1.4300 | 1 | 1.68 | 1.68 |
| 26 | 1.6800 | 2 | 1.05 | 1.38 |
| 27 | 0.4000 | 0 | 0.25 | 0.20 |
| 28 | . | . | . | . |
| 29 | 0.6800 | 1 | 0.83 | 0.75 |
| 30 | 0.5000 | 0 | 0.47 | 1.05 |
| 31 | 0.8000 | 1 | 1.03 | 0.75 |
| 32 | 1.3000 | 2 | 2.48 | 1.73 |
| 33 | 1.7800 | 2 | 1.58 | 3.78 |
| 34 | 0.3500 | 1 | 0.60 | 0.90 |
| 35 | 0.9300 | 1 | 0.88 | 0.60 |

2/6/13 9:47 AM 38/108

Ultrasound.sav

| | SubW4_A | SubW5_A | SubW6_A | SubW7_A |
|---|---|---|---|---|
| 1 | . | . | . | . |
| 2 | 0.2800 | 0.3000 | 0.23 | 0.28 |
| 3 | 0.2300 | 0.1700 | 0.10 | 0.20 |
| 4 | . | . | . | . |
| 5 | 0.4000 | 0.5700 | 0.38 | 0.65 |
| 6 | 0.1700 | 0.1300 | 0.30 | 0.40 |
| 7 | 0.9000 | 0.8000 | 0.90 | 0.80 |
| 8 | . | . | . | . |
| 9 | 0.9500 | 0.7300 | 0.82 | 0.93 |
| 10 | 1.1800 | 0.9500 | 1.30 | 1.13 |
| 11 | 1.7500 | 2.1500 | 2.45 | 2.20 |
| 12 | 0.1000 | 0.1500 | 0.08 | 0.10 |
| 13 | 0.3800 | 0.3800 | 0.40 | 0.20 |
| 14 | . | . | . | . |
| 15 | . | . | . | . |
| 16 | 0.5500 | 0.7300 | 0.53 | 0.73 |
| 17 | 1.5500 | 1.4500 | 1.75 | 1.73 |
| 18 | . | . | . | . |
| 19 | 1.1200 | . | . | . |
| 20 | 1.2000 | 1.5200 | 1.55 | 1.68 |
| 21 | 3.8500 | 3.1800 | 4.20 | 3.78 |
| 22 | 3.3300 | 1.8500 | 3.03 | 1.65 |
| 23 | . | . | . | . |
| 24 | 1.3800 | 1.0800 | 2.08 | 1.78 |
| 25 | 1.7500 | 1.7800 | 2.10 | 1.66 |
| 26 | 0.9500 | 0.8000 | 0.75 | 0.75 |
| 27 | 0.2800 | 0.2000 | 0.17 | 0.30 |
| 28 | . | . | . | . |
| 29 | 1.1500 | 1.0200 | 0.62 | 0.88 |
| 30 | 0.6300 | 0.4000 | 0.55 | 0.55 |
| 31 | 0.6800 | 0.6500 | 0.57 | 0.63 |
| 32 | 1.7500 | 2.0500 | . | . |
| 33 | 1.8500 | 1.5500 | 2.40 | 3.78 |
| 34 | 1.4800 | 0.7000 | 0.98 | 0.90 |
| 35 | 0.5300 | 0.9500 | 0.68 | 0.70 |

2/6/13 9:47 AM 39/108

Ultrasound.sav

| | SubW8_A | SUBPOST_A | ViscPRE1 | VisceralPre2 |
|---|---|---|---|---|
| 1 | . | . | . | 6 |
| 2 | 5.58 | 0.38 | . | 1 |
| 3 | 0.17 | 0.15 | . | 1 |
| 4 | . | . | . | . |
| | 0.45 | 0.43 | . | 1 |
| 6 | 0.38 | 0.55 | . | 0 |
| 7 | 0.78 | 0.80 | . | 1 |
| 8 | . | . | . | . |
| 22 | 0.80 | 0.80 | . | 1 |
| 10 | 1.08 | 0.78 | . | 2 |
| 11 | 2.48 | 2.20 | . | 3 |
| 12 | 0.15 | 0.16 | . | 1 |
| 13 | 0.23 | 0.25 | . | 1 |
| 14 | . | . | . | 1 |
| 15 | . | . | . | . |
| 16 | 0.65 | 0.53 | . | 1 |
| 17 | 1.43 | 1.90 | . | 1 |
| 18 | . | . | . | . |
| 19 | . | . | . | 1 |
| 20 | 1.85 | 2.05 | . | 1 |
| 21 | 3.65 | 3.50 | . | 2 |
| 22 | 2.40 | 3.30 | . | 1 |
| 23 | . | . | . | 2 |
| 24 | 1.62 | 1.58 | . | 2 |
| 25 | . | . | . | 2 |
| 26 | 0.85 | 0.57 | . | 1 |
| 27 | 0.33 | 0.33 | . | 1 |
| 28 | . | . | . | . |
| 29 | 0.73 | 0.78 | 0.78 | 1 |
| 30 | 0.80 | 0.45 | 1.23 | 1 |
| 31 | 0.55 | 0.68 | 0.40 | 0 |
| 32 | . | . | 1.60 | 2 |
| 33 | 3.83 | 2.05 | 1.03 | 1 |
| 34 | 1.15 | 0.55 | 0.43 | 1 |
| 35 | 0.58 | 0.63 | 0.80 | 1 |

2/6/13 9:47 AM 40/108

Ultrasound.sav

| | ViscW1 | ViscW2 | ViscW3 | ViscW4 |
|---|---|---|---|---|
| 1 | . | . | . | . |
| 2 | 0.6800 | 0.7300 | 0.6800 | 0.7500 |
| 3 | 1.0300 | 0.8800 | 1.0300 | 1.2000 |
| 4 | . | . | . | . |
| 5 | 1.4500 | 1.5000 | 1.4300 | 1.3000 |
| 6 | 0.4800 | 0.4800 | 0.4500 | 0.5000 |
| 7 | 0.8000 | 0.6500 | 1.1300 | 1.1800 |
| 8 | . | . | . | . |
| 9 | 1.1000 | 0.8300 | 0.8800 | 0.7300 |
| 10 | 1.6300 | 1.4300 | 1.5000 | 1.5800 |
| 11 | 3.5500 | 2.5000 | 2.7500 | 2.3800 |
| 12 | 0.8800 | 0.8800 | 0.8800 | 0.9300 |
| 13 | 0.4500 | 0.5000 | 0.5300 | 0.5500 |
| 14 | 0.6500 | 0.7300 | . | . |
| 15 | . | . | . | . |
| 16 | 1.6000 | 1.6500 | 1.2500 | 1.2700 |
| 17 | 1.3500 | 1.4500 | 1.4300 | 1.4500 |
| 18 | . | . | . | . |
| 19 | 1.3500 | 1.3800 | 1.4000 | 1.6000 |
| 20 | 1.2300 | 1.1500 | 1.7300 | 1.6500 |
| 21 | 2.0800 | 2.3000 | 2.4300 | 2.4000 |
| 22 | 1.7800 | 1.3800 | 1.4000 | 1.6200 |
| 23 | 2.1300 | . | . | . |
| 24 | 1.9500 | 1.8000 | 1.7500 | 1.6500 |
| 25 | 2.1500 | 2.2800 | 2.2500 | 2.1000 |
| 26 | 1.5500 | 1.5500 | 1.4300 | 1.3300 |
| 27 | 1.1800 | 1.2500 | 1.3300 | 1.1000 |
| 28 | . | . | . | . |
| 29 | 0.8500 | 0.7800 | 0.7500 | 0.9000 |
| 30 | 0.6500 | 1.1500 | 1.1000 | 0.8800 |
| 31 | 0.4700 | 0.4700 | 0.3800 | 0.4300 |
| 32 | 1.9800 | 1.9800 | 1.7500 | 1.6000 |
| 33 | 0.6800 | 0.9500 | 1.1500 | 1.0500 |
| 34 | 0.4800 | 0.4500 | 0.7300 | 0.5800 |
| 35 | 1.5300 | 1.5800 | 1.6000 | 0.7500 |

2/6/13 9:47 AM 41/108

Ultrasound.sav

| | ViscW5 | ViscW6 | ViscW7 | ViscW8 |
|---|---|---|---|---|
| 1 | . | . | . | . |
| 2 | 0.5500 | 0.73 | 1 | 0.95 |
| 3 | 0.8200 | 0.85 | 1 | 0.73 |
| 4 | . | . | . | . |
| 5 | 1.3800 | 1.35 | 1 | 1.28 |
| 6 | 0.4500 | 0.80 | 1 | 0.55 |
| 7 | 0.6800 | 1.13 | 1 | 0.50 |
| 8 | . | . | . | . |
| 9 | 0.8000 | 0.68 | 1 | 1.05 |
| 10 | 1.5300 | 1.63 | 2 | 1.62 |
| 11 | 2.4800 | 2.30 | 2 | 2.13 |
| 12 | 0.8800 | 0.80 | 1 | 0.85 |
| 13 | 0.5500 | 0.65 | 1 | 0.65 |
| 14 | . | . | . | . |
| 15 | . | . | . | . |
| 16 | 1.0000 | 0.35 | 0 | 1.05 |
| 17 | 1.5000 | 1.05 | 1 | 1.25 |
| 18 | . | . | . | . |
| 19 | . | . | . | . |
| 20 | 1.4000 | 1.48 | 1 | 1.43 |
| 21 | 1.9500 | 1.55 | 1 | 1.40 |
| 22 | 1.5000 | 1.53 | 2 | 1.20 |
| 23 | . | . | . | . |
| 24 | 1.6800 | 1.50 | 2 | 1.55 |
| 25 | 2.2000 | 2.05 | 2 | . |
| 26 | 1.3800 | 1.33 | 1 | 1.43 |
| 27 | 1.1800 | 1.23 | 1 | 1.33 |
| 28 | . | . | . | . |
| 29 | 0.8300 | 0.78 | 1 | 0.75 |
| 30 | 1.1300 | 0.93 | 1 | 0.73 |
| 31 | 0.5000 | 0.90 | 1 | 0.73 |
| 32 | 1.7500 | . | . | . |
| 33 | 1.1500 | 0.95 | 1 | 1.10 |
| 34 | 0.9000 | 0.75 | 1 | 0.53 |
| 35 | 0.5300 | 0.95 | 1 | 0.58 |

Ultrasound.sav

| | VISCERALPOST | V170 | V171 | V172 | V173 | V174 |
|---|---|---|---|---|---|---|
| 1 | . | . | . | . | . | . |
| 2 | 0.70 | . | . | . | . | . |
| 3 | 0.73 | . | . | . | . | . |
| 4 | . | . | . | . | . | . |
| 5 | 0.96 | . | . | . | . | . |
| 6 | 0.63 | . | . | . | . | . |
| 7 | 0.75 | . | . | . | . | . |
| 8 | . | . | . | . | . | . |
| 9 | 0.85 | . | . | . | . | . |
| 10 | 0.93 | . | . | . | . | . |
| 11 | 2.05 | . | . | . | . | . |
| 12 | 0.60 | . | . | . | . | . |
| 13 | 0.48 | . | . | . | . | . |
| 14 | . | . | . | . | . | . |
| 15 | . | . | . | . | . | . |
| 16 | 0.68 | . | . | . | . | . |
| 17 | 1.58 | . | . | . | . | . |
| 18 | . | . | . | . | . | . |
| 19 | . | . | . | . | . | . |
| 20 | 1.43 | . | . | . | . | . |
| 21 | 2.08 | . | . | . | . | . |
| 22 | 1.23 | . | . | . | . | . |
| 23 | . | . | . | . | . | . |
| 24 | 1.45 | . | . | . | . | . |
| 25 | . | . | . | . | . | . |
| 26 | 1.33 | . | . | . | . | . |
| 27 | 0.93 | . | . | . | . | . |
| 28 | . | . | . | . | . | . |
| 29 | 0.85 | . | . | . | . | . |
| 30 | 0.93 | . | . | . | . | . |
| 31 | 0.65 | . | . | . | . | . |
| 32 | . | . | . | . | . | . |
| 33 | 1.18 | . | . | . | . | . |
| 34 | 1.05 | . | . | . | . | . |
| 35 | 0.74 | . | . | . | . | . |

2/6/13 9:47 AM 43/108

Ultrasound.sav

| | V199 | SevQpreAVERAGE | SevHapreAVERAGE |
|---|---|---|---|
| 1 | . | . | . |
| 2 | . | 3.86 | 5.15 |
| 3 | . | 4.14 | 4.28 |
| 4 | . | . | . |
| 5 | . | 1.43 | 3.84 |
| 6 | . | 4.17 | 3.83 |
| 7 | . | 3.16 | 3.37 |
| 8 | . | . | . |
| 9 | . | 3.82 | 3.93 |
| 10 | . | 3.93 | 4.34 |
| 11 | . | 3.13 | 5.44 |
| 12 | . | 4.04 | 3.95 |
| 13 | . | 4.42 | 3.74 |
| 14 | . | 4.85 | 4.16 |
| 15 | . | . | . |
| 16 | . | 4.13 | 3.89 |
| 17 | . | 2.40 | 3.28 |
| 18 | . | . | . |
| 19 | . | 4.36 | 2.85 |
| 20 | . | 3.52 | 3.70 |
| 21 | . | 3.23 | 3.02 |
| 22 | . | 3.91 | 3.41 |
| 23 | . | 2.76 | 3.44 |
| 24 | . | 2.47 | 3.98 |
| 25 | . | 3.18 | 3.34 |
| 26 | . | 4.18 | 4.13 |
| 27 | . | 3.65 | 2.89 |
| 28 | . | . | . |
| 29 | . | 3.82 | 4.81 |
| 30 | . | 3.38 | 3.96 |
| 31 | . | 4.49 | 4.05 |
| 32 | . | 3.47 | 3.82 |
| 33 | . | 3.94 | 3.98 |
| 34 | . | 3.71 | 3.65 |
| 35 | . | 4.04 | 4.24 |

2/6/13 9:47 AM 48/108

Ultrasound.sav

| | DeltpreAVERAGE | FATFifQPreAVG | FATSeventyHamPreAVG |
|---|---|---|---|
| 1 | . | . | . |
| 2 | 1.29 | 0.88 | 0.80 |
| 3 | 1.23 | 0.98 | 0.68 |
| 4 | . | . | . |
| 5 | 1.96 | 2.01 | 2.00 |
| 6 | 1.59 | 1.53 | 2.07 |
| 7 | 1.79 | 1.71 | 2.00 |
| 8 | . | . | . |
| 9 | 1.75 | 1.59 | 1.94 |
| 10 | 2.24 | 2.24 | 1.38 |
| 11 | 1.82 | 2.18 | 1.73 |
| 12 | 1.51 | 0.75 | 1.44 |
| 13 | 1.61 | 1.21 | 1.43 |
| 14 | 1.61 | 1.70 | 1.52 |
| 15 | . | . | . |
| 16 | 1.64 | 2.72 | 2.69 |
| 17 | 2.22 | 2.48 | 3.10 |
| 18 | . | . | . |
| 19 | 2.51 | 1.36 | 1.22 |
| 20 | 2.46 | 3.29 | 1.78 |
| 21 | 2.59 | 1.71 | 1.51 |
| 22 | 3.93 | 2.29 | 1.96 |
| 23 | 2.08 | 3.14 | 2.54 |
| 24 | 2.66 | 2.63 | 1.85 |
| 25 | 1.92 | 2.03 | 2.34 |
| 26 | 1.85 | 1.00 | 0.98 |
| 27 | 1.63 | 2.05 | 2.04 |
| 28 | . | . | . |
| 29 | 2.13 | 1.38 | 1.49 |
| 30 | 1.99 | 3.18 | 2.93 |
| 31 | 2.14 | 1.82 | 2.17 |
| 32 | 1.89 | 1.31 | 1.79 |
| 33 | 2.51 | 3.21 | 3.07 |
| 34 | 1.68 | 1.71 | 1.84 |
| 35 | 1.83 | 2.13 | 1.68 |

2/6/13 9:47 AM 49/108

Ultrasound.sav

| | FATDeltPreAVERAGE | FATChestPreAVERAGE |
|---|---|---|
| 1 | . | . |
| 2 | 0.44 | 0.22 |
| 3 | 0.15 | 0.29 |
| 4 | . | . |
| 5 | 0.95 | 0.27 |
| 6 | 0.27 | 0.36 |
| 7 | 0.83 | 0.76 |
| 8 | . | . |
| 9 | 0.84 | 0.46 |
| 10 | 1.04 | 0.38 |
| 11 | 2.42 | 1.11 |
| 12 | 0.54 | 0.29 |
| 13 | 0.32 | 0.22 |
| 14 | 0.47 | 0.20 |
| 15 | . | . |
| 16 | 1.14 | 1.90 |
| 17 | 1.08 | 0.68 |
| 18 | . | . |
| 19 | 0.88 | 0.80 |
| 20 | 1.70 | 1.08 |
| 21 | 2.46 | 1.14 |
| 22 | 2.18 | 1.01 |
| 23 | 1.77 | 0.58 |
| 24 | 1.35 | 0.69 |
| 25 | 1.08 | 0.77 |
| 26 | 0.82 | 0.31 |
| 27 | 0.59 | 0.23 |
| 28 | . | . |
| 29 | 1.02 | 0.33 |
| 30 | 0.84 | 0.35 |
| 31 | 0.79 | 0.69 |
| 32 | 1.32 | 0.85 |
| 33 | 1.07 | 0.77 |
| 34 | 0.77 | 0.21 |
| 35 | 1.08 | 0.36 |

Ultrasound.sav

| | ChestMusclePreAVERAGE | SubScMusclePreAVERAGE |
|---|---|---|
| 1 | . | . |
| 2 | 1.58 | 2.82 |
| 3 | 1.57 | 2.72 |
| 4 | . | . |
| 5 | 2.16 | 2.03 |
| 6 | 1.05 | 1.67 |
| 7 | 1.96 | 1.64 |
| 8 | . | . |
| 9 | 1.23 | 2.73 |
| 10 | 1.50 | 2.22 |
| 11 | 1.96 | 1.86 |
| 12 | 1.98 | 1.52 |
| 13 | 1.79 | 2.01 |
| 14 | 2.18 | 1.62 |
| 15 | . | . |
| 16 | 2.57 | 1.73 |
| 17 | 1.85 | 1.70 |
| 18 | . | . |
| 19 | 1.35 | 2.20 |
| 20 | 1.57 | 1.90 |
| 21 | 1.93 | 2.13 |
| 22 | 2.24 | 2.04 |
| 23 | 1.68 | 2.11 |
| 24 | 1.58 | 1.54 |
| 25 | 1.63 | 2.45 |
| 26 | 1.71 | 1.56 |
| 27 | 1.56 | 1.42 |
| 28 | . | . |
| 29 | 1.38 | 2.32 |
| 30 | 1.02 | 1.24 |
| 31 | 1.19 | 1.09 |
| 32 | 1.80 | 1.75 |
| 33 | 1.74 | 2.24 |
| 34 | 1.19 | 1.09 |
| 35 | 1.01 | 1.38 |

2/6/13 9:47 AM 61/108

Ultrasound.sav

| | FiftyHamMusclePreAVERAGE | FiftyQuadMusclePreAVERAGE |
|---|---|---|
| 1 | . | . |
| 2 | 4.99 | 5.06 |
| 3 | 3.42 | 4.88 |
| 4 | . | . |
| 5 | 4.26 | 4.17 |
| 6 | 2.98 | 4.98 |
| 7 | 3.42 | 4.21 |
| 8 | . | . |
| 9 | 4.19 | 4.74 |
| 10 | 3.76 | 5.09 |
| 11 | 5.33 | 4.54 |
| 12 | 3.52 | 4.64 |
| 13 | 3.58 | 4.96 |
| 14 | 3.55 | 5.37 |
| 15 | . | . |
| 16 | 3.73 | 4.74 |
| 17 | 3.46 | 4.39 |
| 18 | . | . |
| 19 | 2.47 | 4.48 |
| 20 | 4.96 | 4.75 |
| 21 | 2.78 | 4.03 |
| 22 | 3.61 | 4.52 |
| 23 | 3.04 | 3.82 |
| 24 | 3.98 | 5.50 |
| 25 | 3.69 | 4.41 |
| 26 | 4.25 | 4.83 |
| 27 | 3.83 | 4.22 |
| 28 | . | . |
| 29 | 3.60 | 4.65 |
| 30 | 3.34 | 4.34 |
| 31 | 3.29 | 5.36 |
| 32 | 3.55 | 4.62 |
| 33 | 4.21 | 5.60 |
| 34 | 3.55 | 4.13 |
| 35 | 4.03 | 5.18 |

2/5/13 9:47 AM 52/108

Ultrasound.sav

| | SubscapFATPreAVERAGE | VisceralFATPreAVERAGE |
|---|---|---|
| 1 | . | . |
| 2 | 0.32 | 0.79 |
| 3 | 0.29 | 0.86 |
| 4 | . | . |
| 5 | 0.54 | 1.38 |
| 6 | 0.77 | 0.45 |
| 7 | 1.65 | 0.84 |
| 8 | . | . |
| 9 | 1.69 | 1.05 |
| 10 | 0.99 | 1.63 |
| 11 | 2.41 | 3.04 |
| 12 | 0.29 | 0.88 |
| 13 | 0.28 | 0.54 |
| 14 | 0.89 | 0.75 |
| 15 | . | . |
| 16 | 0.95 | 1.32 |
| 17 | 1.87 | 1.33 |
| 18 | . | . |
| 19 | 1.25 | 1.42 |
| 20 | 1.70 | 1.29 |
| 21 | 3.54 | 2.11 |
| 22 | 3.26 | 1.54 |
| 23 | 1.71 | 2.11 |
| 24 | 1.93 | 1.95 |
| 25 | 1.43 | 2.13 |
| 26 | 1.81 | 1.45 |
| 27 | 0.30 | 1.28 |
| 28 | . | . |
| 29 | 0.89 | 0.77 |
| 30 | 0.45 | 0.70 |
| 31 | 0.82 | 0.47 |
| 32 | 1.82 | 1.83 |
| 33 | 2.07 | 0.77 |
| 34 | 0.49 | 0.63 |
| 35 | 0.86 | 1.44 |

Ultrasound.sav

| | ID | Code1young | FilterPostHocsN26 | MUSCLE | @50QPRE1 |
|---|---|---|---|---|---|
| 36 | LD44 | 1 | 8.00 | . | 5.65 |
| 37 | LD45 | 1 | 8.00 | . | 5.35 |
| 38 | LD46 | 1 | 8.00 | . | 3.65 |
| 39 | LD47 | 1 | 8.00 | . | 4.20 |
| 40 | LD48 | 1 | 8.00 | . | 5.90 |
| 41 | | . | . | . | . |
| 42 | | . | . | . | . |
| 43 | | . | . | . | . |
| 44 | | . | . | . | . |
| 45 | | . | . | . | . |
| 46 | | . | . | . | . |
| 47 | | . | . | . | . |
| 48 | | . | . | . | . |
| 49 | | . | . | . | . |
| 50 | | . | . | . | . |
| 51 | | . | . | . | . |
| 52 | | . | . | . | . |
| 53 | | . | . | . | . |
| 54 | | . | . | . | . |
| 55 | | . | . | . | . |
| 56 | | . | . | . | . |
| 57 | | . | . | . | . |
| 58 | | . | . | . | . |

Ultrasound.sav

| | @50QuadPre2 | @50Qw1 | @50Qw2 | @50Qw3 |
|---|---|---|---|---|
| 36 | 6 | 6.05 | 5.9 | 5.90 |
| 37 | 6 | 5.63 | 5.2 | 5.85 |
| 38 | 4 | 4.35 | 4.3 | 4.38 |
| 39 | 5 | 4.38 | 4.9 | 4.83 |
| 40 | 6 | 6.28 | 6.4 | 6.33 |
| 41 | . | . | . | . |
| 42 | . | . | . | . |
| 43 | . | . | . | . |
| 44 | . | . | . | . |
| 45 | . | . | . | . |
| 46 | . | . | . | . |
| 47 | . | . | . | . |
| 48 | . | . | . | . |
| 49 | . | . | . | . |
| 50 | . | . | . | . |
| 51 | . | . | . | . |
| 52 | . | . | . | . |
| 53 | . | . | . | . |
| 54 | . | . | . | . |
| 55 | . | . | . | . |
| 56 | . | . | . | . |
| 57 | . | . | . | . |
| 58 | . | . | . | . |

Ultrasound.sav

| | @50Qw4 | @50Qw5 | @50Qw6 | @50Qw7 |
|---|---|---|---|---|
| 36 | 5.85 | 6.00 | 6.00 | 6.03 |
| 37 | 6.00 | 5.70 | 5.70 | 6.43 |
| 38 | 4.65 | 4.55 | 4.58 | 4.70 |
| 39 | 4.88 | 4.98 | 4.83 | 4.93 |
| 40 | 6.45 | 6.50 | 6.58 | 6.60 |
| 41 | . | . | . | . |
| 42 | . | . | . | . |
| 43 | . | . | . | . |
| 44 | . | . | . | . |

Ultrasound.sav

| | @50Qw8 | @50QPOST | @70QPRE1 | @70QuadPre2 |
|---|---|---|---|---|
| 36 | 5.98 | 6.43 | 4.85 | 6 |
| 37 | 5.97 | 5.93 | 4.53 | 5 |
| 38 | 4.71 | 4.68 | 2.73 | 3 |
| 39 | 4.80 | 4.90 | 2.60 | 3 |
| 40 | 6.60 | 6.53 | 5.25 | 6 |
| 41 | . | . | . | . |
| 42 | . | . | . | . |

Ultrasound.sav

| | @70Qw1 | @70Qw2 | @70Qw3 | @70Qw4 |
|---|---|---|---|---|
| 36 | 5.8300 | 5.7300 | 6.13 | 6.0500 |
| 37 | 4.8000 | 4.4000 | 5.08 | 4.9000 |
| 38 | 3.3000 | 3.3800 | 3.45 | 3.6500 |
| 39 | 3.2800 | 3.5000 | 3.48 | 3.5300 |
| 40 | 5.8300 | 5.8500 | 5.80 | 5.8800 |
| 41 | . | . | . | . |
| 42 | . | . | . | . |

Ultrasound.sav

| | @70Qw5 | @70Qw6 | @70Qw7 | @70Qw8 |
|---|---|---|---|---|
| 36 | 5.9600 | 6.3300 | 6.1800 | 6.0300 |
| 37 | 5.0800 | 4.9300 | 5.4800 | 4.8800 |
| 38 | 3.5000 | 3.8300 | 3.6000 | 3.7800 |
| 39 | 3.6300 | 3.6800 | 3.6000 | 3.6300 |
| 40 | 5.8500 | 6.0300 | 6.1100 | 6.0300 |
| 41 | . | . | . | . |
| 42 | . | . | . | . |

Ultrasound.sav

| | @70QPOST | @50QPRE1_A | @50HamPre2 | @50Hw1 |
|---|---|---|---|---|
| 36 | 6.00 | 3.96 | 4 | 4.3500 |
| 37 | 4.93 | 5.43 | 5 | 4.4000 |
| 38 | 3.85 | 3.73 | 4 | 3.6300 |
| 39 | 3.53 | 3.63 | 4 | 4.2000 |
| 40 | 6.05 | 4.90 | 5 | 4.5000 |
| 41 | . | . | . | . |
| 42 | . | . | . | . |
| 43 | . | . | . | . |
| 44 | . | . | . | . |

Ultrasound.sav

| | @50Hw2 | @50Hw3 | @50Hw4 | @50Hw5 |
|---|---|---|---|---|
| 36 | 4.33 | 4.3500 | 4.4000 | 4.5000 |
| 37 | 4.83 | 4.6300 | 5.1500 | 5.3800 |
| 38 | 3.78 | 3.7800 | 3.7800 | 3.9500 |
| 39 | 4.70 | 4.8300 | 4.6800 | 4.6800 |
| 40 | 4.55 | 4.6800 | 4.4800 | 4.9800 |
| 41 | . | . | . | . |

Ultrasound.sav

| | @50Hw6 | @50Hw7 | @50Hw8 | @50HPOST |
|---|---|---|---|---|
| 36 | 4.35 | 4.38 | 4.50 | 4.73 |
| 37 | 5.33 | 5.15 | 5.28 | 4.98 |
| 38 | 3.83 | 3.88 | 3.78 | 3.90 |
| 39 | 4.83 | 4.78 | 4.93 | 5.03 |
| 40 | 4.90 | 5.07 | 4.75 | 4.88 |
| 41 | . | . | . | . |
| 42 | . | . | . | . |
| 43 | . | . | . | . |
| 44 | . | . | . | . |
| 45 | . | . | . | . |
| 46 | . | . | . | . |

Ultrasound.sav

| | @70QPRE1_A | @70HamPre2 | @70Hw1 | @70Hw2 |
|---|---|---|---|---|
| 36 | 4.4600 | 4.6500 | 4.5500 | 4.5300 |
| 37 | 4.9800 | 4.6000 | 4.7800 | 4.4100 |
| 38 | 3.2300 | 3.4800 | 3.2800 | 3.3800 |
| 39 | 4.5000 | 4.2000 | 4.0800 | 4.2800 |
| 40 | 4.5500 | 5.5300 | 5.2800 | 5.5000 |
| 41 | . | . | . | . |

Ultrasound.sav

| | @70Hw3 | @70Hw4 | @70Hw5 | @70Hw6 |
|---|---|---|---|---|
| 36 | 4.4300 | 4.45 | 5.0000 | 4.7800 |
| 37 | 4.6800 | 5.03 | 4.9000 | 5.1800 |
| 38 | 3.6800 | 3.55 | 3.8000 | 3.5000 |
| 39 | 4.3000 | 4.25 | 4.1500 | 4.4300 |
| 40 | 5.5000 | 5.25 | 5.1500 | 5.0800 |
| 41 | . | . | . | . |

Ultrasound.sav

| | @70Hw7 | @70Hw8 | @70HPOST | DeltPRE1 |
|---|---|---|---|---|
| 36 | 4.4 | 5.33 | 4.78 | 2.2300 |
| 37 | 5.1 | 5.18 | 4.88 | 1.9800 |
| 38 | 3.8 | 4.30 | 4.10 | 2.1500 |
| 39 | 5.0 | 5.18 | 5.33 | 1.8000 |
| 40 | 4.8 | 5.03 | 5.15 | 2.3800 |
| 41 | . | . | . | . |
| 42 | . | . | . | . |
| 43 | . | . | . | . |

Ultrasound.sav

| | DeltoidPre2 | DeltW1 | DeltW2 | DeltW3 |
|---|---|---|---|---|
| 36 | 2.4300 | 2.5800 | 2.4800 | 2.4500 |
| 37 | 1.6000 | 1.7800 | 2.1000 | 1.9800 |
| 38 | 2.1800 | 2.2800 | 2.2000 | 2.2500 |
| 39 | 1.6500 | 1.7500 | 1.8000 | 1.9000 |
| 40 | 2.4800 | 2.3000 | 2.2500 | 2.6500 |
| 41 | . | . | . | . |
| 42 | . | . | . | . |
| 43 | . | . | . | . |
| 44 | . | . | . | . |
| 45 | . | . | . | . |
| 46 | . | . | . | . |
| 47 | . | . | . | . |
| 48 | . | . | . | . |

Ultrasound.sav

| | DeltW8 | DELTPOST | ChestPRE1 | ChestPre2 |
|---|---|---|---|---|
| 36 | 2.63 | 2.50 | 1.45 | 2 |
| 37 | 2.38 | 2.18 | 1.38 | 2 |
| 38 | 2.23 | 2.40 | 1.18 | 1 |
| 39 | 1.93 | 1.70 | 1.20 | 1 |
| 40 | 2.78 | 2.65 | 1.53 | 2 |
| 41 | . | . | . | . |
| 42 | . | . | . | . |
| 43 | . | . | . | . |

Ultrasound.sav

| | ChestW1 | ChestW2 | ChestW3 | ChestW4 |
|---|---|---|---|---|
| 36 | 1.3500 | 1.1800 | 1.1300 | 1.2800 |
| 37 | 1.2500 | 1.5500 | 1.5500 | 1.3000 |
| 38 | 1.4800 | 1.6800 | 1.7000 | 2.1000 |
| 39 | 1.2000 | 1.2500 | 1.0500 | 1.3000 |
| 40 | 1.7500 | 2.0500 | 1.4500 | 2.3000 |
| 41 | . | . | . | . |

| | ChestW5 | ChestW6 | ChestW7 | ChestW8 |
|---|---|---|---|---|
| 36 | 1.48 | 1.60 | 1.18 | 1.5 |
| 37 | 1.48 | 1.55 | 1.45 | 1.6 |
| 38 | 1.93 | 1.80 | 1.88 | 2.2 |
| 39 | 1.25 | 1.80 | 1.40 | 1.6 |
| 40 | 2.12 | 2.18 | 2.78 | 2.1 |

Ultrasound.sav

| | CHESTPOST | SUBPRE1 | SubscapPre2 |
|---|---|---|---|
| 36 | 1.60 | 1.12 | 2 |
| 37 | 1.68 | 2.08 | 1 |
| 38 | 1.88 | 1.25 | 1 |
| 39 | 1.23 | 0.80 | 2 |
| 40 | 2.23 | 1.28 | 1 |
| 41 | . | . | . |
| 42 | . | . | . |

Ultrasound.sav

| | SubW1 | SubW2 | SubW3 | SubW4 |
|---|---|---|---|---|
| 36 | 2 | 1.50 | 1.3800 | 1.35 |
| 37 | 2 | 1.60 | 1.3500 | 1.80 |
| 38 | 1 | 1.38 | 1.6500 | 1.95 |
| 39 | 1 | 1.63 | 1.6000 | 1.98 |
| 40 | 1 | 1.52 | 2.0300 | 1.55 |
| 41 | . | . | . | . |
| 42 | . | . | . | . |

Ultrasound.sav

| | SubW5 | SubW6 | SubW7 | SubW8 |
|---|---|---|---|---|
| 36 | 1.80 | 1.88 | 1.9 | 1.75 |
| 37 | 1.30 | 1.50 | 2.4 | 1.70 |
| 38 | 1.18 | 1.15 | 1.2 | 1.50 |
| 39 | 2.68 | 2.28 | 1.4 | 1.83 |
| 40 | 1.48 | 1.73 | 2.0 | 1.50 |
| 41 | . | . | . | . |
| 42 | . | . | . | . |
| 43 | . | . | . | . |

Ultrasound.sav

| | DeltW4 | DeltW5 | DeltW6 | DeltW7 |
|---|---|---|---|---|
| 36 | 2.5500 | 2.4500 | 2.5800 | 2.7000 |
| 37 | 2.0300 | 2.0500 | 1.8000 | 2.0800 |
| 38 | 2.2000 | 2.3300 | 2.2800 | 2.3800 |
| 39 | 1.8000 | 1.7000 | 1.7000 | 1.8500 |
| 40 | 2.4500 | 2.6300 | 2.6300 | 2.5800 |
| 41 | . | . | . | . |
| 42 | . | . | . | . |
| 43 | . | . | . | . |


Ultrasound.sav

| | SubW5 | SubW6 | SubW7 | SubW8 |
|---|---|---|---|---|
| 36 | 1.80 | 1.88 | 1.9 | 1.75 |
| 37 | 1.30 | 1.50 | 2.4 | 1.70 |
| 38 | 1.18 | 1.15 | 1.2 | 1.50 |
| 39 | 2.68 | 2.28 | 1.4 | 1.83 |
| 40 | 1.48 | 1.73 | 2.0 | 1.50 |
| 41 | . | . | . | . |
| 42 | . | . | . | . |


Ultrasound.sav

| | SUBPOST | FAT | @50QPRE1_B | @50QuadPre2_A | @50Qw1_A |
|---|---|---|---|---|---|
| 36 | 1.8 | . | 1.8 | 1.9000 | 1.80 |
| 37 | 1.9 | . | 1.5 | 1.2500 | 1.25 |
| 38 | 1.2 | . | 1.1 | 1.5800 | 1.50 |
| 39 | 2.2 | . | 1.0 | 0.9800 | 0.90 |
| 40 | 1.7 | . | 0.9 | 1.0000 | 0.95 |
| 41 | . | . | . | . | . |
| 42 | . | . | . | . | . |

Ultrasound.sav

| | @50Qw2_A | @50Qw3_A | @50Gw4 | @50Qw5_A |
|---|---|---|---|---|
| 36 | 2.0300 | 2.0800 | 1.58 | 1.6000 |
| 37 | 1.2300 | 1.6500 | 1.35 | 1.6300 |
| 38 | 1.4500 | 1.5500 | 1.50 | 1.4000 |
| 39 | 1.0000 | 0.8300 | 0.93 | 1.1000 |
| 40 | 0.8800 | 1.0500 | 0.90 | 0.9000 |

Ultrasound.sav

| | @50Qw6_A | @50Qw7_A | @50Qw8_A | @50QPOST_A |
|---|---|---|---|---|
| 36 | 1.70 | 1.5 | 1.3000 | 1.1800 |
| 37 | 1.13 | 1.4 | 1.1000 | 1.1800 |
| 38 | 1.40 | 1.4 | 1.2500 | 1.4000 |
| 39 | 0.90 | 0.9 | 0.8800 | 0.9000 |
| 40 | 0.95 | 0.8 | 0.9300 | 0.8000 |
| 41 | . | . | . | . |
| 42 | . | . | . | . |
| 43 | . | . | . | . |
| 44 | . | . | . | . |

Ultrasound.sav

| | @70QPRE1_B | @70QuadPre2_A | @70Qw1_A | @70Qw2_A |
|---|---|---|---|---|
| 36 | 1.15 | 1 | 1.40 | 1.3500 |
| 37 | 1.18 | 1 | 1.18 | 1.3000 |
| 38 | 1.27 | 1 | 1.18 | 0.9500 |
| 39 | 1.05 | 1 | 0.95 | 1.0800 |
| 40 | 0.70 | 1 | 0.85 | 0.7000 |
| 41 | . | . | . | . |

Ultrasound.sav

| | @70Qw3_A | @70Qw4_A | @70Qw5_A | @70Qw6_A |
|---|---|---|---|---|
| 36 | 1.5000 | 0.8500 | 1.4800 | 0.82 |
| 37 | 1.1800 | 1.1000 | 1.1500 | 1.08 |
| 38 | 1.2300 | 1.1800 | 1.1200 | 1.08 |
| 39 | 1.1500 | 0.9300 | 0.8200 | 0.85 |
| 40 | 0.8000 | 0.7500 | 0.6800 | 0.70 |
| 41 | . | . | . | . |
| 42 | . | . | . | . |

Ultrasound.sav

| | @70Qw7_A | @70Qw8_A | @70QPOST_A | @50HPRE1 |
|---|---|---|---|---|
| 36 | 1.15 | 1.1 | 1.0 | 2.2 |
| 37 | 1.28 | 0.9 | 0.8 | 1.5 |
| 38 | 1.10 | 1.0 | 1.0 | 1.7 |
| 39 | 0.63 | 0.9 | 0.9 | 1.1 |
| 40 | 0.80 | 0.9 | 0.7 | 1.6 |
| 41 | . | . | . | . |

Ultrasound.sav

| | @50HamPre2_A | @50Hw1_A | @50Hw2_A | @50Hw3_A |
|---|---|---|---|---|
| 36 | 3 | 3.23 | 3.0800 | 3.2500 |
| 37 | 2 | 2.78 | 1.5800 | 2.1000 |
| 38 | 2 | 2.50 | 2.4300 | 2.1800 |
| 39 | 2 | 1.52 | 1.4300 | 1.1800 |
| 40 | 2 | 2.40 | 2.5000 | 2.3000 |
| 41 | . | . | . | . |

Ultrasound.sav

| | @50Hw4_A | @50Hw5_A | @50Hw6_A | @50Hw7_A |
|---|---|---|---|---|
| 36 | 2.75 | 3.2000 | 2.8 | 3.03 |
| 37 | 1.80 | 1.1500 | 1.3 | 1.55 |
| 38 | 1.80 | 2.1000 | 2.0 | 2.13 |
| 39 | 1.43 | 1.3000 | 1.3 | 1.13 |
| 40 | 2.13 | 2.0800 | 1.7 | 1.78 |
| 41 | . | . | . | . |

Ultrasound.sav

| | @50Hw8_A | @50HPOST_A | @70HPRE1 | @70HamPre2_A |
|---|---|---|---|---|
| 36 | 2.83 | 2.6100 | 1.48 | 1.5000 |
| 37 | 1.70 | 1.9800 | 1.02 | 1.1500 |
| 38 | 2.90 | 2.4500 | 1.03 | 1.4500 |
| 39 | 1.08 | 1.1000 | 0.78 | 1.0800 |
| 40 | 2.23 | 2.2000 | 0.78 | 1.0500 |
| 41 | . | . | . | . |
| 42 | . | . | . | . |

Ultrasound.sav

| | @70Hw1_A | @70Hw2_A | @70Hw3_A | @70Hw4_A |
|---|---|---|---|---|
| 36 | 2.1000 | 1.8800 | 2.35 | 1.0800 |
| 37 | 1.4500 | 1.0800 | 1.00 | 1.2000 |
| 38 | 1.6800 | 1.4500 | 1.38 | 1.3500 |
| 39 | 1.3300 | 1.3300 | 1.35 | 1.4300 |
| 40 | 1.3000 | 1.3300 | 1.03 | 1.2300 |
| 41 | . | . | . | . |
| 42 | . | . | . | . |
| 43 | . | . | . | . |

Ultrasound.sav

| | @70Hw5_A | @70Hw6_A | @70Hw7_A | @70Hw8_A |
|---|---|---|---|---|
| 36 | 1.63 | 1.3 | 2.00 | 1.20 |
| 37 | 0.83 | 1.0 | 1.05 | 0.85 |
| 38 | 1.18 | 1.4 | 1.35 | 1.73 |
| 39 | 1.38 | 0.9 | 0.68 | 0.70 |
| 40 | 1.23 | 1.1 | 2.21 | 1.58 |
| 41 | . | . | . | . |

Ultrasound.sav

| | @70HPOST_A | DeltPRE1_A | DeltoidPre2_A | DeltW1_A |
|---|---|---|---|---|
| 36 | 0.8 | 0.38 | 0.3300 | 0.3500 |
| 37 | 1.1 | 0.78 | 0.5700 | 0.7300 |
| 38 | 1.9 | 0.80 | 1.1000 | 1.1300 |
| 39 | 0.6 | 0.38 | 0.3300 | 0.2800 |
| 40 | 1.2 | 0.93 | 0.8000 | 0.9000 |
| 41 | . | . | . | . |
| 42 | . | . | . | . |
| 43 | . | . | . | . |
| 44 | . | . | . | . |

Ultrasound.sav

| | DeltW2_A | DeltW3_A | DeltW4_A | DeltW5_A |
|---|---|---|---|---|
| 36 | 0.3500 | 0.4500 | 0.4300 | 0.1700 |
| 37 | 0.5500 | 0.6500 | 0.6300 | 0.5300 |
| 38 | 0.8500 | 0.9500 | 1.0800 | 0.7800 |
| 39 | 0.3000 | 0.3300 | 0.2500 | 0.3500 |
| 40 | 0.9000 | 1.1300 | 0.9300 | 0.8000 |
| 41 | . | . | . | . |
| 42 | . | . | . | . |
| 43 | . | . | . | . |

Ultrasound.sav

| | DeltW6_A | DeltW7_A | DeltW8_A | DELTPOST_A |
|---|---|---|---|---|
| 36 | 0.53 | 0.65 | 0.47 | 0.2500 |
| 37 | 0.43 | 0.53 | 0.57 | 0.5300 |
| 38 | 0.95 | 0.90 | 0.83 | 0.7500 |
| 39 | 0.43 | 0.43 | 0.35 | 0.4000 |
| 40 | 0.85 | 0.93 | 0.93 | 0.9000 |
| 41 | . | . | . | . |
| 42 | . | . | . | . |

Ultrasound.sav

| | ChestPRE1_A | ChestPre2_A | ChestW1_A | ChestW2_A |
|---|---|---|---|---|
| 36 | 0.18 | 1.2000 | 0.3500 | 0.2800 |
| 37 | 0.28 | 0.2800 | 0.4000 | 0.3500 |
| 38 | 0.30 | 0.6500 | 0.5700 | 0.3800 |
| 39 | 0.30 | 0.4300 | 0.2300 | 0.3500 |
| 40 | 0.58 | 0.6200 | 0.4700 | 0.5300 |
| 41 | . | . | . | . |
| 42 | . | . | . | . |

Ultrasound.sav

| | ChestW3_A | ChestW4_A | ChestW5_A | ChestW6_A |
|---|---|---|---|---|
| 36 | 0.38 | 0.3800 | 0.2500 | 0.30 |
| 37 | 0.43 | 0.5000 | 0.4300 | 0.33 |
| 38 | 0.25 | 0.5300 | 0.4500 | 0.53 |
| 39 | 0.33 | 0.3300 | 0.2800 | 0.20 |
| 40 | 0.35 | 0.3800 | 0.6000 | 0.63 |
| 41 | . | . | . | . |
| 42 | . | . | . | . |

Ultrasound.sav

| | ChestW7_A | ChestW8_A | CHESTPOST_A | SubPRE1_A |
|---|---|---|---|---|
| 36 | 0.45 | 0.2 | 0.3 | 0.3000 |
| 37 | 0.28 | 0.4 | 0.3 | 0.7800 |
| 38 | 0.50 | 0.5 | 0.5 | 0.4000 |
| 39 | 0.43 | 0.3 | 0.3 | 0.4700 |
| 40 | 0.63 | 0.4 | 0.5 | 0.9800 |
| 41 | . | . | . | . |

Ultrasound.sav

| | SubscapPre2_A | SubW1_A | SubW2_A | SubW3_A |
|---|---|---|---|---|
| 36 | 0.5700 | 1 | 0.83 | 0.53 |
| 37 | 0.5000 | 0 | 0.47 | 0.43 |
| 38 | 0.4500 | 1 | 0.45 | 0.68 |
| 39 | 0.2500 | 0 | 0.43 | 0.78 |
| 40 | 1.0800 | 1 | 0.90 | 0.83 |
| 41 | . | . | . | . |

Ultrasound.sav

| | SubW4_A | SubW5_A | SubW6_A | SubW7_A |
|---|---|---|---|---|
| 36 | 0.6500 | 0.7500 | 0.70 | 0.57 |
| 37 | 0.3000 | 0.5000 | 0.40 | 0.60 |
| 38 | 0.3300 | 0.5700 | 0.43 | 0.40 |
| 39 | 0.5800 | 0.3800 | 0.30 | 0.43 |
| 40 | 0.8800 | 0.8500 | 0.80 | 0.83 |
| 41 | . | . | . | . |
| 42 | . | . | . | . |

Ultrasound.sav

| | SubW8_A | SUBPOST_A | ViscPRE1 | VisceralPre2 |
|---|---|---|---|---|
| 36 | 0.40 | 0.60 | 0.60 | 0 |
| 37 | 0.68 | 0.43 | 0.68 | 1 |
| 38 | 0.50 | 0.53 | 0.43 | 1 |
| 39 | 0.48 | 0.38 | 1.23 | 1 |
| 40 | 0.90 | 0.95 | 0.58 | 1 |
| 41 | . | . | . | . |

Ultrasound.sav

| | ViscW1 | ViscW2 | ViscW3 | ViscW4 |
|---|---|---|---|---|
| 36 | 0.6800 | 0.5000 | 0.4300 | 0.3500 |
| 37 | 0.9300 | 1.1800 | 1.0000 | 0.8300 |
| 38 | 0.3800 | 0.5300 | 0.5000 | 0.7300 |
| 39 | 0.7800 | 1.2500 | 1.3000 | 1.0800 |
| 40 | 0.5500 | 0.5500 | 0.5800 | 0.6800 |
| 41 | . | . | . | . |
| 42 | . | . | . | . |

Ultrasound.sav

| | ViscW5 | ViscW6 | ViscW7 | ViscW8 |
|---|---|---|---|---|
| 36 | 0.3300 | 0.35 | 1 | 0.55 |
| 37 | 0.6000 | 0.75 | 1 | 0.73 |
| 38 | 0.3300 | 0.75 | 1 | 0.40 |
| 39 | 0.6300 | 0.70 | 1 | 1.10 |
| 40 | 0.4300 | 0.80 | 1 | 0.95 |
| 41 | . | . | . | . |

| | VISCERALPOST | V170 | V171 | V172 | V173 | V174 |
|---|---|---|---|---|---|---|
| 36 | 0.60 | . | . | . | . | . |
| 37 | 0.65 | . | . | . | . | . |
| 38 | 0.48 | . | . | . | . | . |
| 39 | 1.05 | . | . | . | . | . |
| 40 | 0.98 | . | . | . | . | . |

Ultrasound.sav

| | V199 | SevQpreAVERAGE | SevHapreAVERAGE |
|---|---|---|---|
| 36 | . | 5.81 | 4.60 |
| 37 | . | 4.76 | 4.69 |
| 38 | . | 3.25 | 3.38 |
| 39 | . | 3.30 | 4.14 |
| 40 | . | 5.71 | 5.41 |
| 41 | . | . | . |
| 42 | . | . | . |
| 43 | . | . | . |

Ultrasound.sav

| | DeltpreAVERAGE | FATFifQPreAVG | FATSeventyHamPreAVG |
|---|---|---|---|
| 36 | 2.51 | 1.85 | 1.80 |
| 37 | 1.69 | 1.25 | 1.30 |
| 38 | 2.23 | 1.54 | 1.57 |
| 39 | 1.70 | 0.94 | 1.21 |
| 40 | 2.39 | 0.98 | 1.18 |
| 41 | . | . | . |
| 42 | . | . | . |
| 43 | . | . | . |
| 44 | . | . | . |

Ultrasound.sav

| | FATDeltPreAVERAGE | FATChestPreAVERAGE |
|---|---|---|
| 36 | 0.34 | 0.77 |
| 37 | 0.65 | 0.34 |
| 38 | 1.12 | 0.61 |
| 39 | 0.31 | 0.33 |
| 40 | 0.85 | 0.54 |
| 41 | . | . |
| 42 | . | . |
| 43 | . | . |
| 44 | . | . |

Ultrasound.sav

| | ChestMusclePreAVERAGE | SubScMusclePreAVERAGE |
|---|---|---|
| 36 | 1.60 | 1.52 |
| 37 | 1.40 | 1.70 |
| 38 | 1.36 | 1.28 |
| 39 | 1.15 | 1.69 |
| 40 | 1.63 | 1.33 |
| 41 | . | . |
| 42 | . | . |

Ultrasound.sav

| | FiftyHamMusclePreAVERAGE | FiftyQuadMusclePreAVERAGE |
|---|---|---|
| 36 | 4.28 | 5.89 |
| 37 | 4.53 | 5.72 |
| 38 | 3.73 | 4.29 |
| 39 | 4.24 | 4.54 |
| 40 | 4.69 | 6.03 |
| 41 | . | . |

Ultrasound.sav

| | SeventyQuadFATPreAVERAGE | FiftyHamFATPreAVERAGE |
|---|---|---|
| 36 | 1.27 | 3.21 |
| 37 | 1.23 | 2.36 |
| 38 | 1.15 | 2.32 |
| 39 | 0.93 | 1.55 |
| 40 | 0.83 | 2.09 |
| 41 | . | . |

Ultrasound.sav

| | SubscapFATPreAVERAGE | VisceralFATPreAVERAGE |
|---|---|---|
| 36 | 0.68 | 0.56 |
| 37 | 0.45 | 0.87 |
| 38 | 0.48 | 0.47 |
| 39 | 0.32 | 1.04 |
| 40 | 0.99 | 0.65 |
| 41 | . | . |
| 42 | . | . |
| 43 | . | . |
| 44 | . | . |
| 45 | . | . |