The Effects Of Weight Training On A Select Group Of Carroll College Freshman Women

Cathy Huffer
Carroll College

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THE EFFECTS OF WEIGHT TRAINING ON A SELECT GROUP OF CARROLL COLLEGE FRESHMAN WOMEN

A Thesis
Presented to the Faculty of
Carroll College

In Fulfillment of the
Hornors Thesis Program

by
Cathy Ruth Huffer
April 1974
This thesis for honors recognition has been approved for the Department of Physical Education.

Sandra C. Williamson
Director

Lena Kelly
Reader

March 26, 1974
Date
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PREFACE

The male half of our species has participated in various physical activities for numerous years. Yet, until recently, it was unheard of for women to engage in many of these activities. Why? Because of past myths our society has gathered down through the years in response to women and physical exertion. For years women participated only in those feminine sports which took little strength and little mental discipline. Many felt that a real "lady" could not endure physical nor mental pressure. While Uncle Sam was encouraging the United States to build men in body, mind, and spirit, the women were being pampered to the point that they were becoming relatively physically unfit.

No country in history has held physical education in such high respects as did the ancient Greeks. While we often rely upon their past findings to guide us in various areas, we fail to apply their knowledge of physical education wholeheartedly to our present system.

To the Hellenes,

"man was a whole; and he was as strong as his weakest part. One part of him could not be sound if the other parts were not also sound."\(^1\)

---

Socrates displayed a belief that even in thinking, where it seems the body is used very little, bad health can contribute to grave mistakes. Aristotle held that, "the body and soul are closely interrelated and that mental faculties are affected by bodily movement and conditions of body health." Plato is said to even have expressed the idea that physical education was of great importance to women as well as men!

Today, our scientific research has provided support to these ancient Greek philosophies. In the past two to three decades we, fortunately, have witnessed a rise in women's roles in sports and physical activities. Women are now encouraged to participate in many physical activities. The variety and challenge of those activities women are allowed to partake in are continuously growing. Yet, the eyes of modern mankind are still partly clouded with past myths. It is still believed, to some extent, that women should not engage in any activity requiring strenuous physical exertion.

One area of physical activity which has been raising the brows of many people today is weight training for women. Weight training for boys and men is an accepted practice. After all, think of all the barbell sets down in the basements of our American homes, and of all the 98 pound weaklings who now rule the beaches. Where do these throughs lead when we think of women and weight training? Usually two thoughts come to mind: (1) a beautiful blonde haired lady whose figure is distorted with bulging muscles and consequent loss of feminity, and

\[2\text{Ibid.}, \text{p. 308.}\]
(2) the questions concerning possible damage brought to female organs when women engage in any movement of heavy objects.

Many female athletes are engaging in weight training programs with apparent benefits, but can a weight training program be of benefit to the ordinary female who is seeking over-all fitness? A weight program that is not a supplemental program, but an entire program in itself? One which would provide an increase in strength without producing those bulging muscles or in any other way hindering the participants' feminity? The examination and answering of these questions is the constituent of this thesis.
CHAPTER I

ANATOMICAL AND PHYSIOLOGICAL DATA
PERTINENT TO WEIGHT TRAINING

Perhaps the field of athletics has best brought to light the high physical capabilities of women. It is through performances in this field that women have shown that they are not only capable of strenuous physical activity, but also, that they appear to thrive on it. Data collected on biological responses to stress indicate now that the female can hold her own in most activities heretofore considered the domain of the male.

Although the anatomical differences between the sexes favor the male, this does not mean that the female cannot compete successfully within her realm. The male skeleton is more rugged, the bones more massive and of greater density, and the longer bones longer, in general appearance. The joints of the male are relatively larger and present a greater articulate surface. These overall characteristics give the male a decided advantage in leverage, arc of movement, and other aspects. Women, on the other hand, have a greater advantage in the area of balance. They have a wider knee joint which provides them with a greater stability in relation of height to width. The female pelvic girdle is also wider, aiding in stability and therefore greater balance is achieved.
The development of muscle mass is dependent upon the variations of hormonal secretions of androgen, estrogen, progesterone, and testosterone. An individual's physique, then, is dependent upon the present variations of these hormones and not upon physical activity or training.

"It is inherent endocrinological and morphological factors that are responsible for femininity and masculinity and not vigorous physical activity which too often is held to blame."3

Dr. C. Harman Brown, a specialist in endocrinology, believes that the predominantly male hormone, testosterone, is responsible for muscle bulkiness in males. As he states,

"Testosterone is present in women, but the amount is probably too low to have any substantial effect upon their muscle size."4

These findings support the theory that women can gain in strength without bulking their muscles.

One of the beliefs held by American women today is that any strenuous activity will endanger the female abdominal region, causing bad side effects during menstruation and child birth. This is one of the main reasons why Americans are so far behind the Europeans in the general health of their women.


Medical findings today refute the postulate that strenuous activity subject the mesenteries and other supportive tissue to tearing and concomitant trauma to the neighboring organs.

"The exercise indulged in by a women athlete in training and in conditioning, as well as in actual competition, tends to strengthen the floor of the pelvis and the surrounding tissues and bring about an improved tonicity of the muscles."  

As with any other muscle in the body, the cardiac, or heart muscle strengthens when taxed. Modern physiologists support the belief that in order for an exercise program to be of real benefit to the cardiovascular system:

"1. It must be vigorous enough to produce 150 beats per minute or more.
2. It must be continued at this level for at least five minutes.
3. It must be performed regularly."  

During exercise of this type, the heart is forced to increase in cardiac output. To do this, nervous and hormonal influences stimulate a stronger contraction of the heart muscle. This stronger contraction can more than double the stroke volume by more completely emptying the ventricle; during rest only about 50% of the total diastolic volume is ejected during each ventricular contraction. Exercise, then, forces a more complete emptying, which in turn allows the heart to decrease its rate and thus increases its efficiency.

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"It should be pointed out that a relatively slow heart rate, coupled with a relatively large stroke volume, indicates an efficient circulatory system. This is true because, for a given cardiac output, the heart does not beat as often."

As a whole then, physical activity, such as weight training enhances all systems of the human body, be it male or female. All systems become more efficient, bringing about a better overall feeling.

CHAPTER II

PROCEDURES

In preparation for the experimental program, letters (Appendix A) were sent to various colleges and universities (Table 1) to obtain current information on weight training programs they might offer their coeds. The letters requested copies of their programs and any available results.

At the first meeting of the Carroll College fall semester basic fitness class, the essence of the experimental weight training program was explained to the group. Ten volunteers were then selected from the class to participate in the program. The ten, all freshmen, consisted of athletically inclined girls as well as non-athletically inclined girls, girls who were satisfied with their present weight to girls who were either overweight or underweight, and girls who thought they were in fair physical condition to girls who felt they were in poor physical condition. No tests were taken to determine physical fitness levels of the participants.

The experimental group was not to be a controlled group. It was to differ in no way from the other activity courses the college offers their coed students. The girls were not required to maintain a specific diet, and although they were encouraged to employ self-discipline in increasing their maximum weights moved and number of exercises done, they were not subjected to external pressures.

If the program had required a controlled group, then its results would have been beneficial only to future controlled groups and not to
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future uncontrolled, standard coed activity courses, for whom it was being designed.

The program was set up for a twelve week period with the girls meeting twice a week, Tuesday and Thursdays, for one hour each day. Twenty-three of the scheduled twenty-four classes were held.

Height, weight, and girth measurements were taken at the beginning of the program, half way through the program, and again at the end of the twelve weeks (Chart 1). An exercise chart (Chart 2), showing the maximum weight moved at each station per class was also kept by each girl.

The weight program was based upon progressive resistance exercises. At the first class the girls each found their repetition maximums for each station. Repetitions refers to the number of consecutive times a particular exercise is performed. Repetition maximum refers to the greatest weight that can be moved ten times consecutively. Every session after the first, the girls were to go through a complete progressive repetition pattern. The pattern employed here was:

- 1 set of 10 repetitions of 1/2 RM
- 1 set of 10 repetitions of 3/4 RM
- 1 set of repetitions of RM

Set refers to the number of groups of repetitions of a particular exercise done without rest. In this particular weight program, then, the girls were to do three sets at each station. A few of the girls actually found it impossible to lift even the least amount of weight ten times at some of the stations. These girls were instructed to
# Chart 1

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*Height, Weight, and Girth Measurements*
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**Exercise Recordings**
vary the pattern then by finding the maximum number of times they could move the lowest weight and fitting it into this pattern:

1 set of $1/2$ the number of repetitions at the lowest weight
1 set of $3/4$ the number of repetitions at the lowest weight
1 set of the maximum number of repetitions at the lowest weight

This allowed the girls to set up their own individual programs. They were encouraged to increase their own strength at intervals, but not to try to raise their maximum to reach or surpass another student's. The individuality of the program also allowed the girls to work hardest on those areas they felt needed the most attention.

Instructions on the use of the various stations were given during the first class in order to insure safety and to provide the girls with knowledge of the proper, most beneficial, ways in which to work at each station. The concept of negative work, eccentric contraction used when returning the weight to its starting position, was also explained.

Due to breakage of parts of the Universal Gym and to the inability to secure boot weights, the participants were forced to improvise in some areas of exercise. The bench press, leg press, knee bench, triceps pullover, high lateral pull, incline board (for sit-ups) and the military press were all used according to standard procedures. The rest of the exercises, listed in chart 2, were performed as follows:

Back raises: The girls started their back raises on the Universal Gym apparatus, but towards the last 5 classes they
incorporated their back raises into winglifts. This change was brought about to insure safety for the girls. By now they were performing numerous back raises and the up and down movement of their upper trunks were beginning to make them dizzy.

To execute a winglift the girls worked in pairs. Girl number one would lie in a prone position on the floor with her hands placed behind her head. The second girl applies pressure to the first girl's legs while the first girl tries to lift her chest as far off of the floor as possible. The first girl is to hold her position off of the floor, in isometric contraction, for a given amount of time. The number of repetitions were on an individual basis.

Adduction and abduction of the legs: For the first four weeks of the program the girls would stand sideways to a wall, arms distance away placing the inside hand on the wall, and then adduct and abduct each leg a given number of times. For the rest of the program, the girls worked in pairs for these two exercises. Lying opposite each other in supine positions with their feet touching, one girl puts her legs on the outside of her partner's legs. In this position, the girl with her legs on the inside abducts her legs, trying to push her partner's legs further apart. The girl who has her legs on the outside, then, adducts her legs trying to keep her partner's legs close together. It was felt that the second way of doing these exercises would tax the muscles more due to the increased resistance.
**Lateral waists:** Until the last two weeks of class, lateral waists were executed by standing in an anatomical position, holding a weight in one hand extended at the side and then bending laterally to the opposite side. The exercise was repeated a given number of times on both sides. For the last two weeks the girls worked in partners for the lateral waists. The girl executing the exercise lies stretched out on one side with her hands locked behind her head. Bending only laterally, she tries to raise her shoulders off of the floor as far as possible and then hold this position for a given amount of time. Her partner helps by kneeling behind her and placing one knee behind her buttocks to prevent her from rolling forward and placing one hand on her ankles and the other on her hip in order to keep her lower extremities in contact with the floor.

After the girls had increased their weights to ten pounds, using the first method of exercise, it became cumbersome to hold the weights. Therefore, the second method was initiated. It was believed that the resistance of the girl's own body weight would tax the muscles as efficiently as had the first method.

**Front flies:** The equipment used for this exercise consisted of $2\frac{1}{2}$, 5, and 10 pound weights and a stack of mats. The student would lie in a supine position on the mats with her head near the edge. With the arms in a slightly hyperextended horizontal position over the edge of the mats and a weight in each hand the student flexes the shoulder joint and partially flexes the arm at
the elbow, thereby, ending with the hands together directly above the chest and with the elbows slightly bent. The exercise was being performed wrong if the elbow were allowed to bend beyond a 45 degree angle. Individually, the girls increased the amount of weight they used and the number of repetitions they did.

*Hip extension and flexion:* These exercises were performed for the first four weeks by using the same technique used for adduction and abduction of the legs. From the fifth week on, the girls worked in pairs to execute these two exercises. The partners would lie down in supine positions with their feet at right angles to one another. One partner's legs would be stretched out on top of the other's; the top person would try to hold down the bottom person's legs, therefore the top person would be executing hip extension and the bottom person would be executing hip flexion. The partners would apply this isometric pressure for a given amount of time and for a given number of times. The reason behind changing the method of executing these two exercises is the same as that for changing the method of adduction and abduction.

Starting the fourth week of the program, the girls ran after they had finished lifting their weights for that session. The running was incorporated to help build up their cardio-respiratory system and to provide them with an exercise which allowed them to "loosen up". The running, as with the weight lifting, was on an individual basis; some of the girls would run the entire distance while others combined running, jogging, and walking to complete
the given distance.

Before working out on the weights each class period, the girls were to warm-up by performing jumping jacks and stretch exercises. The warm-up period serves to increase the heart rate and respiratory rate, insuring an adequate blood and oxygen supply to the active muscles, and to prevent muscle strain. This period also helps to prepare the individual psychologically for what lies ahead. Athletes and coaches have long appreciated the contribution of the warm-up to the quality of performance.

When performing the weight lifting exercises, the girls were to do one type of exercise emphasizing one area of the body and then follow with another exercise emphasizing a different area of the body. This pattern of rotation of exercises was a safeguard to keep the girls from applying an excess amount of stress, which could cause undue soreness and stiffness, to any one part of the body.

The second week of classes, the girls were asked to write down the goals which they desired to achieve in the program, such as, losing weight, toning up muscles, or developing better physical fitness. At the end of the program, then, they were to write comments as to their ability of failure in achieving these goals.

The comments were also to include any personal feelings they had in relation to the effect of the program upon their femininity as they saw it, and any other thoughts they desired to express at that time.
CHAPTER III

RESULTS

Ten of the twelve colleges and universities send correspondence letters replied (Table 2). Although several mentioned that their female athletes engaged in weight training, no one had a definite program. And no one had a program designed for women's activity classes.

The results obtained from the experimental program can be divided into two major areas: (1) the statistical results of the strength gains and of the changes in the girls' weight and girth measurements, and (2) the attitudes the girls held at the end of the program in relation to the way they felt physically, their self-concepts, and their views of the program as a whole.

The exercises which involved the use of the leg muscles showed the greatest amounts of strength gain. On the low position of the leg press, the average increase was 62 lbs., with the highest increase being 100 lbs. and the lowest 40 lbs. The largest average increase for the entire program, 80 lbs., was recorded for the high position of the leg press. On the knee bench exercises, the average gain for the quadriceps was 48.8 lbs., and the average gain for the hamstrings, the lowest of all for the leg exercises, was 17.7 lbs.

Exercises employing the arm muscles showed much lower average strength gains than did those of the legs. The highest average gain
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in this area was recorded for the high lateral pull, 20 lbs. The highest individual gain for this exercise was 40 lbs., while the lowest was 0 lbs. Average gains for the bench press, triceps pullover, and the military press were 16.6 lbs., 13.3 lbs., and 12.2 lbs., respectively. Refer to Graph 1.

The results for those exercises not performed on the Universal Gym are as follows:

**Sit-ups:** While performing their sit-ups on the floor, the girls averaged an increase of 11 sit-ups. One girl, who started out doing 9 sit-ups, had only increased by 3 after four classes. Within the same period of time, another girl in the class had increased her number by 20.

Using the incline board, the girls, on an average, were up to the third level of the five level board by the end of the program, doing an average of 14 sit-ups at this level. The lowest number recorded for this level was 6 sit-ups and the highest number was 35 sit-ups.

**Back raises:** The average increase for back raises performed on the Universal Gym apparatus was 26.6. The highest increase was 45 and the lowest increase was 16. During the last two weeks of the program, when the girls changed to doing winglifts, they increased from doing 5 winglifts, each held for 5 seconds, to 10 winglifts, each held for 10 seconds.

**Adduction and abduction of the legs:** While performing these
Graph 1

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<th>Exercise</th>
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Average Weight Increases in Pounds
two exercises in the first manner described in chapter 2, the girls averaged an increase of 13.1 leg lifts per exercise. When the method of executing the exercises was changed, the girls, on the average, started at 5 times held for 5 seconds and worked up to 12 times held for 10 seconds.

**Hip extension and flexion:** The methods used for these two exercises being quite similar to those used for adduction and abduction of the legs, bore identical results to those for adduction and abduction.

Strength gains for the isometric exercises, which included back raises, adduction and abduction of the legs, and hip extension and flexion, could not be measured accurately, as were the isotonic exercises, but we still must assume that there was a strength gain.

"When a muscle contracts isometrically (increases tension without shortening) there is, mechanically speaking, no work done at all; yet it is fact that muscle strength ... can be greatly increased by using an isometric type of contraction during exercise."⁸

The results do show that the girls increased their number of contractions and the length of each contraction during the program. The girth measurements, therefore, were effected, but to what degree could not be determined.

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⁸Mathews and Fox, The Physiological Basis of Physical Education and Athletics, p. 72.
In the weight and girth measurements, the girls averaged loses in four areas and gains in six. The average weight loss was $1\frac{1}{2}$ lbs., with the greatest amount of weight lost during the program by any one girl being $9$ lbs., and the greatest amount of weight gained being $2$ and $3/4$ lbs. Girth measurements taken for the thigh area show an average loss of $\frac{1}{2}$". The greatest amount loss in this area was recorded as being $2\frac{1}{2}$" and the greatest amount of gain here was recorded as $2\frac{1}{4}$". In the calf region, the average loss was $1/8"$, with the greatest amount of loss being $1$ and $3/4"$ and the greatest amount of gain being $\frac{1}{3}$". Results from measurements taken in the ankle region show and average loss of $\frac{1}{2}$", with the greatest loss being $3/4$" and the greatest gain being $\frac{1}{4}$".

The measurements taken for the arm show results of an average loss of less than $1/8$" in the forearm, an average gain of $5/8$" in the biceps when extended and $\frac{1}{3}$" when flexed, and an average gain of approximately $1/8$" in the wrists.

In the bust, hip, and waist regions, the girls had an average gain of $3/16"$, $\frac{1}{2}$", and $3/8"$, respectively. Refer to Graphs 2 and 3.

A complete individual analysis of all of the girls, consisting of their results in strength gains and girth measurements and their own written comments at the end of the program, would become repetitious, and therefore, only three specific cases shall be presented.

Case one: This individual gained more strength in more areas than any of the other girls. While most of the girls were pushing
Graph 2

Average Girth Increases in Inches
Graph 3

Average Girth Decreases in Inches
50 lbs. on both the bench press and the military press, this young lady was pushing 80 lbs. on the bench press and 60 lbs. on the military press. Her strength on the knee bench really stands out when compared to the rest of the class. On an average the other girls were pushing 50 lbs. with their quadriceps and 30 lbs. with their hamstrings while the individual in this case was pushing 100 lbs. with her quadriceps and 50 lbs. with her hamstrings.

She gained only slightly in size in her hips and waist while losing from $\frac{1}{4}''$ to $\frac{1}{2}''$ in all other areas. By the end of the program she had lost a total of $3\frac{1}{2}''$ lbs.

Her comments at the end of the program showed that she possessed a sense of achievement and success.

"One important part of weight training is the sense of achievement I got from it. After lifting the weights I felt exhausted, but pleased that I could control my body in this way. The strain of trying to increase the weight at each station increased my ego... Makes me feel great."

Case two: The individual in this case was approximately 30 lbs. overweight. Her increases in strength were average or below, yet she did decrease in many girth measurements. In her upper arms she lost $2\frac{1}{4}''$ and in her forearms she lost between $\frac{1}{2}''$ and $\frac{3}{4}''$. By the end of the program, her weight had decreased only by $1\frac{1}{2}''$ lbs.

Her self analysis at the end of the program showed that she felt much better physically then she had at the beginning and that she was not at all discouraged about not having lost more weight.
"I feel that the program was successful in helping me tone up. I probably would have gained more weight if I had not been in it."

Like many people, she possessed the idea that weight training would bulk her up, but the results proved just the opposite for her.

"At first, I must admit, I was leery of the course because I felt that it would probably turn me into the perfect lady wrestler. But the effect was quite the opposite and I'm glad that I took it."

Case three: This girl, although she weighed what she should for her height and structure, was probably the least physically fit of all of the girls at the beginning of the program. By the end of the program, she had reached average of above average strength gains. Her intent at the beginning of the program was to re-proportion her weight distribution, and that is exactly what she accomplished.

Self-analysis supports the concept of better overall fitness through weight training.

"I feel better physically because of this course ... in the past few years I've been doing less and less and I haven't been getting necessarily weaker, but I get tired too easily ... I have a little more energy now, so if I get out and do things I feel better and I don't feel so weighted down and stationary."

For this individual, like many of the others in the program, the program brought about an opportunity for self achievement and satisfaction.
"I really felt like I was accomplishing something and even though I didn't increase a lot on the weights, I still felt like I was making progress. My muscles are beginning to feel tighter and that's what I wanted."
CHAPTER IV

CONCLUSION AND RECOMMENDATIONS

The results gained in this experimental program verify the belief that women can gain in strength while participating in a weight training program without gaining substantially in girth measurements, or bulking their muscles. The girth measurements, on the average, showed losses in the thighs, calves, and ankles; and it was in the exercises which utilized the muscles of these same areas that the greatest strength gains were recorded. In the areas where the girls gained the least amounts of strength, they either lost little in girth measurements or else they actually gained in girth measurements. They gained an average of 3/8" in the waist, and the exercise which they performed for this area, sit-ups, showed a low increase average. For further specific examples, refer to Graphs 1, 2, and 3.

It must be remembered that the girls were working on an individual basis with limited outside pressure. It is believed that if more individual discipline had been applied, the girls would have increased their maximum repetitions more and would therefore have decreased more in girth measurements. Also, one must take into consideration that these girls were freshmen students, therefore they were experiencing for the first time the effects of college food. It is not at all unusual for college freshmen women to gain from ten to
twenty pounds their first semester at college due to the change in their eating habits. In fact, one of the girls in the program had gained nine pounds the first two weeks of school, before the program started. During the program, which lasted for the next twelve weeks, she managed to stabilize her weight with a total increase of only one and one-fourth pounds over the twelve week period.

None of the girls felt in any way that their feminity had been impaired. The comments at the end of the program showed that the girls in fact believed that the program had enhanced their feminity. They all, except one, had developed better self concepts during the program. And after all, isn't one's feminity directly related to one's self concept?

The results indicate that a weight training program for women can be of great worth. It's benefits cannot be disputed and its presence could add to the variety of physical activities offered to women today.

Since the participants in the program represented an uncontrolled group, the program could be fitted into any situation which offered the use of a weight machine. The employment of weights would offer variety as well as a definite way of seeing one's improvement, or strength gains. Women are tired of doing the same exercises in Y.M.C.A.s and other physical fitness organizations and classes. The main reason women fail to stay in exercise programs is because they become bored or disillusioned. It is well known that people usually reach their psychological limit before they reach their
physiological limits. They think that they cannot go any further physically so instead of pushing themselves they give up.

The self analyses of the girls shows that a weight program can offer a challenge and, more important, it allows them to actually witness their improvement. This heightens one's psychological limits, which heightens her physiological limits, and soon a cycle is set in motion. The setting in motion of this cycle is one of the major problems facing physical educators today.

It is recommended that the program itself could be improved in the following ways.

Boot weights would allow the participants to increase their maximum weights moved for adduction and abduction of the legs and hip extension and flexion in the same way they increase in the leg press or any other exercise on the Universal Gym.

The employment of a weight jacket would benefit participants in performing back raises, lateral waists, and sit-ups. They could then increase the amount of weight they lifted which would allow them to see their strength gains.

In order for exercise to be beneficial to the cardiovascular system, as mentioned in Chapter 1, the heart rate must reach 150 beats per minute and this level must be maintained for at least five minutes. Few women could be expected to raise their heart rates this high and to maintain it for five minutes when lifting weights. Therefore, it is felt that a running program incorporated within the
weight program would be most beneficial for the cardiovascular system. Suitable pulse rate tests would have to be determined and then employed within the program.

Individual programs, setting specific dates for specific weight increases may help to encourage and motivate the participants. Individual characteristics, however, must be taken into consideration here since different people are motivated or discouraged by different methods of motivation.

In light of the results of this experimental program, it is suggested that weight training programs, using the afore mentioned recommendations, be introduced into activity programs for women.
Appendix A  Letter of Correspondence

July 31, 1973

162 Henry Street
Helena, Montana
59601

Ms. Doris Brown
Women's Physical Education
Seattle Pacific College
Seattle, Washington 98119

Dear Ms. Brown,

I am a senior at Carroll College, Helena, Montana, this school year, 1973-74. Here at Carroll, we have an Honors Program for seniors; with an option of doing research in our particular field and presenting a thesis for credit or giving an oral. I have chosen a thesis pertaining to weight training programs for women.

Part of my research is to obtain current information from various schools which have weight training programs for women. If your women engage in such a program I would appreciate very much a copy of your program and any results available.

Thank you for your time and consideration in my educational endeavor.

Sincerely,

Cathy Huffer
BIBLIOGRAPHY

BOOKS


PERIODICALS
