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A STUDY TO DETERMINE THE EFFECT OF EXERCISE ON DEPRESSION IN
MIDDLE-AGED WOMEN

Middle Tennessee State University

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A STUDY TO DETERMINE THE EFFECT OF EXERCISE
ON DEPRESSION IN MIDDLE-AGED WOMEN

by

Dolores Custer Weaver

A dissertation
submitted in partial fulfillment
of the requirements for the degree of
Doctor of Arts in the Department of
Health, Physical Education, Recreation, and Safety
Middle Tennessee State University
August 1984

A STUDY TO DETERMINE THE EFFECT OF EXERCISE
ON DEPRESSION IN MIDDLE-AGED WOMEN

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ABSTRACT

A STUDY TO DETERMINE THE EFFECT OF EXERCISE ON DEPRESSION IN MIDDLE-AGED WOMEN

by Dolores Custer Weaver

This study investigated the effect of aerobic exercise on emotional depression in middle-aged women. In order to test the null hypothesis that aerobic exercise had no significant effect on middle-aged women, data were collected at the beginning, mid-session, and at the completion of the six-week experimental aerobic exercise program. The Multiple Affect Adjective Check List (MAACL), by Zuckerman and Lubin, was used to collect the data for this investigation. Further information was obtained from: 1) Life-Style Questionnaire, 2) Shape-Up Chart, and 3) Food List Chart, each of which was developed by the investigator.

Fifty middle-aged females enrolled in organized aerobic exercise classes served as the experimental group, while the control group consisted of twenty middle-aged women not involved in an exercise program.

A one-way analysis of variance was used to determine if there was a significant difference at the $.05$ level between the two groups on the MAACL. The information from

Dolores Custer Weaver

the Life-Style Questionnaire, Shape-Up Chart, and Food List Chart is given descriptively in percentages.

An F-ratio of 4.00 was required in order to have significance at the $>.05$ level of significance. The obtained F-ratio of 49.69^{xxx} was well above the level required for significance. As a result of the analysis of the data, one concludes that an aerobic exercise program can be an effective method of alleviating depression in middle-aged women.

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CHAPTER 1

Introduction

Depression is an emotion frequently experienced by middle-aged women and is thought to be partially due to the individual's realization that the aging process is in progress.¹ One postulate suggests that an aging, unfit body will not function properly, thus, causing a feeling of frustration and depression in the affected individual.²

Therefore, it might be of special interest to women if it can be determined that an instructed, progressive, exercise program could lead to the rehabilitation of the body so that it will function more effectively and provide emotional stability.³ Participation in such an exercise program could contribute to the well-being of the middle-aged female's emotional stability.

¹ "Can Exercise Prevent Old-age Spread?" The Physician and Sportsmedicine, IX:LXXV (1981), citing Toni L. Goldfarb, "Shapescope: Research Updates," Shape, II:IV (Dec., 1982), p. 116.

² Ronald Hellison, Humanistic Physical Education (Englewood Cliffs, NJ: Prentice-Hall, 1973).

³ Matthew G. Maetozo, "Athletic Coaching: Its Future in a Changing Society," Journal of Physical Education and Recreation, LII (March, 1981), 40-43.

Statement of the Problem

The purpose of this study is to determine the effect of a consistent and progressive exercise program on emotional depression in middle-aged women.

Significance of the Study

Although women's exercise programs have been evaluated, they have generally been limited to college-aged females. Similarly, there have been many evaluations related to depression and stress, but again, this research generally has been concerned with children or college-aged females. In most cases, the role of exercise has not been evaluated as a means of alleviating depression in the middle-aged female. Thus, one can only speculate on the effectiveness of an exercise program as a means of alleviating depression in the middle-aged female. There is a need to demonstrate whether or not exercise develops a more fit body, and thus, has a potential for a more healthful and active life. Does exercise, known to promote greater oxygen intake and to increase the metabolic rate, increase the possibility of the person alleviating depression without the use of drugs?⁴

⁴ Mildred Cooper and Kenneth H. Cooper, Aerobics For Women (New York: M. Evans and Co., 1972), pp. 23-24; Sydney Filson and Claudia Jessup, Jump Into Shape (New York: Ballantine Books, 1978), p. 2.

Between four and eight million Americans are estimated to suffer from depression which is serious enough to keep them home from work and in need of medical treatment. Statistics also indicate that the majority of depressed persons seeking professional help are women.⁵ Among other statistics, a partial cause for this result could be a realization of the aging process, as well as the empty nest syndrome, and marital problems associated periodically with middle-age.⁶

According to Green and Green, it is clear that the function of the body and mind are interrelated.⁷

Without belaboring the point, it is clear that the body affects the mind, and the mind affects the body. Every change in the physiological state is accompanied by an appropriate change in the mental-emotional state, conscious, or unconscious, and conversely, every change in the mental-emotional state, conscious or unconscious, is accompanied by an appropriate change in the psychological state.⁸

⁵ William Fassbender, You and Your Health (New York: John Wiley and Sons, 1980), p. 34.

⁶ Lenore Radloff, "Depression and the Empty Nest," Sex Roles, VI:VI (December, 1980), pp. 775-781; Rosalind C. Barnett and Grace K. Baruch, "Women in Middle Years: A Critique of Research and Theory," Psychology of Women Quarterly, XIII (Winter, 1978), pp. 186-196.

⁷ Elmer E. Green and Alyce M. Green, "Striate and Autonomic Self-Regulation Biofeedback and Yoga," The Humanistic and Mental Health Aspects of Sports, Exercise and Recreation, ed. T. Craig (American Medical Association, 1976), pp. 122-24.

⁸ Ibid., p. 124.

Exercise, then, could be a means to assist in balancing or re-establishing a balance of the psychological problems of depression.

Delimitations of the Study

This investigation is to be limited to women in the 30-60 years age range, who are engaged in various life styles and occupations. The age range will be the only limitation.

The women are to be selected from aerobic dance exercise classes conducted by this investigator. The exercise procedure is to be conducted to music, in a class situation, for an hour's duration, twice weekly.

Definition of Terms

The following terms unique to the language used in aerobic exercise, plus other relevant terms, are defined as they will be used in this study.

1. Aerobic Metabolism is the metabolic function derived from activities which use energy from an adequate oxygen supply.

2. Carotid Pulse Count, a widely used method to monitor and establish target heart rates, or target zones, is attained by gently placing the three middle fingers at the location of the carotid artery on either side of the

neck, counting for 15 seconds and multiplying the results by four.⁹

3. Choreographed Aerobic Routines are aerobic exercises designed in a set pattern to correspond to specific music.

4. Continuous Movement indicates that the students are not allowed to sit or stand between routines, once the session is in progress.

5. Cool-down Routines are routines performed at the end of the exercises and at a slower pace, to allow the heart rate to recover.

6. Depression refers to emotional dejection greater than that warranted by any objective reason.

7. Energy Level refers to individual capacity for physical activity without causing abnormal fatigue.

8. Flexibility Routines are stretching type exercises performed slowly in order to prepare the body for the more vigorous exercise to come.

9. Floor Routines are designed specifically for the legs and stomach.

10. Individual Pace refers to the speed and level of intensity at which the individual exercises; age, physical condition, and ability to exercise are factors to consider.

⁹ William Couldry et al., "Carotid vs Radial Pulse Count," The Physician and Sportsmedicine, X:XII (Dec., 1982), pp. 61-71.

11. Levels refers to one or a combination of three levels at which aerobic exercises are performed: (1) walking (beginner); (2) jogging (intermediate); or (3) running (advanced).

12. Maximum Attainable Heart Rate (M.A.H.R.) is 220 minus the individual's age. An individual's maximum heart rate is the number of times the heart beats per minute as the body is exerted to its maximum.¹⁰

13. Middle-aged refers to the female between the ages of 30-60 years.

14. Peak Routines are routines done at maximum exertion, consisting of continuous movement, which activates and accelerates the oxygen intake and corresponding heart rate response toward the 85% level of the target zone.

15. Recovery Heart Rate refers to a measurement taken immediately after the cool-down routines and should be 120, or less. Ten minutes after the completion of exercise, the heart rate should be 100, or below.

16. Resting Heart Rate (R.H.R.) refers to the normal heart rate; the average for women is 78-84.

17. Stress refers to an abnormal amount of mental or emotional tension.

¹⁰ Beth A. Kuntzleman and Consumer Guide, The Complete Guide to Aerobic Dancing (New York: Beekman House, 1979), pp. 10-11.

18. Symbol refers to a design chosen by a student to represent her personality.

19. Target Zone (Appendix) refers to a heart rate zone of 70% to 85% of the M.A.H.R.

20. Warm-up Routines are performed after the flexibility routine and precede the peak routine.

21. The Workout consists of three periods: a warm-up, peak work, and a cool-down.

22. Working Heart Rate (W.H.R.) refers to working within the target zone, and is an indicator of the intensity and effectiveness of the workout.

Basic Assumptions

This investigator assumes that each student will, while a participant in this study:

1. Strive to do each exercise at her highest energy level.
2. Participate in each regularly scheduled class session.
3. Be responsible for securing the approval of her family physician to continue in the program should any question arise concerning her health.

Hypothesis

For the purpose of this study, the following null hypothesis was tested:

There would be no significant difference in the feeling of relief of tension and diminished depression by middle-aged women following participation in a regular, progressive, instructed, aerobic exercise program.

CHAPTER 2

Review of the Literature

Depression

"Depression," according to the National Institute of Mental Health, "is an emotional state of dejection and sadness ranging from mild discouragement and downheartedness to feelings of utter hopelessness."¹ Depression does not necessarily refer to psychopathological levels, but rather, can refer to distress caused by unpleasant emotions in normal individuals as well as the emotionally and mentally ill. Depression can further be described as feelings of anxiety, unworthiness, loss of pleasure in normal activities, fatigue, insomnia, and thoughts of suicide in extreme cases. Depression differs in depth and duration as well as from individual to individual. Typical normal depressions, such as feeling down or the lowering of emotional moods below normal for a given person is a basic, natural experience and is generally short lived.² Serious or clinical depression tends to be more serious and is likely to last for weeks or

¹ Susan Sturdivant, Therapy With Women (New York: Springer Pub., Co., 1980), p. 20.

² Ibid., p. 21.

even months.³ Normal daily activities may appear too overwhelming to complete or even attempt.

Neurotic depression, according to Brandon, is characterized by despair, passivity, a feeling of futility and self-condemnation.⁴ Insel, on the other hand, refers to depression as an absence of all feeling.⁵

The term depression, then, can cover a multitude of conditions, whose only common denominator, it seems, may be that the individual feels sad and dejected. Depression, when present, has the distinctly unique feature of seldom being the only reaction displayed. Depression is generally accompanied by fear, anger, tension, hopelessness and more than likely a complaint of physical symptoms.⁶

According to Brussel, Hippocrates (460-360 B.C.), the first person to notice the lowering of emotional tones, observed the symptoms occurring almost exclusively in women.⁷

³ William Fassbender, You and Your Health (New York: John Wiley and Sons, 1980), p. 34.

⁴ Nathaniel Brandon, The Psychology of Self-Esteem (Los Angeles: Nash Publications Corp., 1969), p. 169.

⁵ Paul M. Insel and Walton T. Roth, Core Concepts in Health (Palo Alto, CA: Mayfield Publishing Co., 1979), p. 296.

⁶ James A. Brussel and Theodore Irvin, Understanding and Overcoming Depression (New York: Hawthorn Books, 1973), p. 22

⁷ Ibid.

Evidently, then, depression is not an emotion exclusive to modern women.

Women and Depression. Surveys and epidemiological findings generally support the conclusion that adult women are more distressed than their male counterparts. Middle-aged women are consistently the highest risk group for psychological disturbance as contrasted to men.⁸ Dr. Lois Vergrugge, studying at the University of Michigan, concluded that 50% to 80% more women than men take medication for depression. She attributed her findings to the fact that women tend to feel more helpless about life and that they experience less active and less interesting social lives.⁹

Dr. Jessie Bernard, a professor emeritus of sociology at Pennsylvania State University, is another authority who, according to Kraines, contends that depression is an increasingly serious problem among women, and especially married women.¹⁰

At times, a woman, ashamed of the self she is supposed to be, progressively avoids others, and, consequently,

⁸ Sandra M. Levy, "The Aging Woman: Developmental Issues and Mental Health Needs," Professional Psychology, XII:I (Feb., 1981), pp. 92-102; Iris Sangiliano, In Her Time, (New York: William Morrow, 1978), p. 151.

⁹ "Intelligence Report," Parade Magazine (Nashville: Nashville Tennessean Publishing, Nov. 14, 1982), p. 11.

¹⁰ Samuel H. Kraines, Help for the Depressed (Springfield, IL: Charles C. Thomas, Publishing, 1979), p. 45.

tends to feel depressed.¹¹ Female socialization sometimes results in women having extremely ambivalent feelings about their bodies. Some therapists encourage women patients to start or increase physical fitness, body awareness and coordination programs, in order to feel at ease about themselves.¹² Some women grieve and become depressed as their child-bearing age draws to a close. Emotional symptoms of menopause include irritability, nervousness, depression, and temporary distortions in close personal relationships. Tranquilizers, sometimes prescribed by doctors, douse their feelings of feeling trapped, and guilty feelings about feeling depressed.¹³ Being city bound, family orientated, responsibility-laden, and feeling the compulsion to occupy all of the waking hours with tasks, and being sometimes financially drained may cause depression.¹⁴

Many of the major health problems in the United States can be classified as chronic degenerative diseases. Page and Blair showed that chronic diseases such as hypertension, obesity and coronary heart disease are continuous and

¹¹ George A. Sheehan, Running and Being (New York: Simon and Schuster, 1978), p. 49.

¹² Sturdivant, op. cit., p. 171.

¹³ Sangiliano, loc. cit.

¹⁴ Ibid.

progressive and can begin at an early age.¹⁵ Involvement in physical activities, it seems, can generally minimize the effect of these ailments.¹⁶

Loneliness. The feeling of loneliness can produce fear and alarm. The disappearance of the extended family, loss of one's love, the inability to work or socialize may contribute significantly to feelings of isolation and depression.¹⁷ The average family moves fourteen times. Another factor possibly contributing to the feeling of isolation and depression is the loneliness caused by moving away from friends, neighbors, and familiar surroundings.¹⁸

Aging Effects. Women of western cultures, especially Americans, have always feared the passing of youth. As women of the western culture age, they sometimes feel they are becoming less physically attractive and desirable. Many women fail to develop qualities which improve with age, such as wisdom and practical application of experience to cope with problems. In most traditional tribal and eastern

¹⁵ R. R. Pate and S. M. Blair, "Exercise and the Prevention of Atherosclerosis: Pediatric Implications," Atherosclerosis: Its Pediatric Aspects, ed. W. B. Strong (New York: Grune and Stratton Co., 1978)

¹⁶ Insel and Roth, op. cit., p. 99.

¹⁷ Ibid., p. 76.

¹⁸ Ibid.

cultures, growing older entitles one to more honor and status.¹⁹

Kraines tends to think that the fact that western women feel less needed as they age, has an effect on the woman's body tissue, the musculature and its use, and definitely on her posture and carriage. Pelvic muscles begin to sag as spirits and emotions collapse. Prolapse, or a falling down of the uterus, seems to have something to do with the woman's relationship to her body and the way in which she feels about herself.²⁰

Gradual changes in appearance through aging seem to accelerate without proper and regular exercise. The more important changes occurring include an increase in connective tissue fibers between the body cells, a gradual loss of the elastic properties of skin and blood vessels, an increase in fat cells, blood fats and sugars, a decrease in muscular strength, and a diminution of secretion from the gonads.²¹ Because people tend to exercise less as their age increases, there usually is a lowering of the fitness levels. Lower fitness levels, in turn, cause a significant

¹⁹ Juanita H. Williams, Psychology of Women (New York: W. W. Norton and Co., Inc., 1977), p. 362.

²⁰ Kraines, op. cit., p. 45; John Man, Walk, It Could Change Your Life (New York: Paddington Press Ltd., 1979), p. 187.

²¹ Williams, op. cit., p. 356.

decrease in cardiorespiratory functions and an increase in blood pressure.²² Other changes which occur in the nervous system with a decrease in exercise are cell death, caused by oxygen deprivation and chemical changes in the cells themselves.²³

Some researchers feel that middle-aged depression in women is sometimes due to a lack or a decrease of important roles in life. A consequent lapse of self-esteem, due to the subsequent lapse of youth, promotes a decrease or slowing down of bodily functions and management.²⁴

An important therapeutic change in feminine therapy would indicate that women should come to terms with and accept their bodies. Some therapists suggest a physical fitness program and body awareness investigation to enable women to feel comfortable about their total selves.²⁵

Women, it seems, sometimes feel cheated and left out as they sense youth is slipping away and emotional and physical reserves being depleted. The husband or mate is still generally working around youthful and attractive women,

²² Michael Pollock and Steven N. Blair, "Exercise Prescription," Journal of Physical Education and Recreation, LII (January, 1981), pp. 30-35.

²³ Williams, op. cit., p. 357.

²⁴ Deborah Szekely Mazzanti, Secrets of the Golden Door, (New York: Bantam Books, 1977), pp. 60-67.

²⁵ Ibid., p. 60.

which possibly adds to the aging woman's feelings of insecurity. The musculature of the middle-aged woman begins to become flabby, vision may demand bifocals, and fertility is fading. Sagging cheeks, a feeling of a loss of youthful attractiveness, the suggestion of a double chin and the disappearance of the trim, lithe figure, are all constant reminders to the woman that she is aging. She may feel threatened and depressed.²⁶

A study reported in The Physician and Sportsmedicine describes two women over 70 years of age, and members of the 1980 All-American Master's Swim Team. Their body fat composition was comparable to that of most average sized women aged nineteen to twenty-two, and their oxygen transport tested as being twice as efficient as the average older woman; they were lean and fit as well as more emotionally stable.²⁷

Chemical Effects of Exercise

Some types of depression seem to be related to chemical disturbances in the brain.²⁸ Other scientific research

²⁶ Man, op. cit., p. 110.

²⁷ Toni Goldfarb, "Can Exercise Prevent Old-Age Spread?" "Shapescope: Research Update," Shape, II:IV (Dec., 1982), p. 116.

²⁸ Insel and Roth, op. cit., p. 77.

indicates that depressive conditions may also be the results of changes in body chemistry.²⁹ Chemical imbalances are most likely to occur when the body undergoes significant changes, such as during menopause.³⁰ These changes, according to Twerski, can give rise to changes within the emotional system. Kraine feels that the mood is good when there is an optimal integration of all biochemical (neurohormonal) activities.³¹ Philosophical attitudes can stimulate, but not create, the happiness that physiological harmony induces. Dr. Lee Salk, another authority, believes that endogenous depression, or fluctuating mood change is due to an actual physical disorder or chemical or hormonal imbalance within the individual's body.³²

Norepinephrine production increases dramatically during exercise. Howley conducted a study in which, after 30 minutes of exercising on a treadmill at 80% of maximal aerobic capacity, the norepinephrine excretion level (measured by urinary excretion) of healthy young males, measured four and

²⁹ Abraham J. Twerski, Like Yourself (Englewood Cliffs, New Jersey: Prentice-Hall, 1978), pp. 143-143.

³⁰ Kraines, op. cit., p. 8.

³¹ Twerski, op. cit., p. 143.

³² Lee Salk, "When Someone You Love is Depressed," McCalls (Nov., 1980), p. 72.

a half times the pre-exercise excretion level.³³ It's probable that women show the same results. Norepinephrine production, known to be low in depressed persons, increases significantly during exercise.³⁴ The onset of depression is not always the final symptom of low norepinephrine production. The gastric juices even cease to flow freely if the individual becomes depressed, thus causing discomfort and possibly additional depression.³⁵

Lactate accumulation may induce anxiety.³⁶ Pitts and McClure conducted a study in which fourteen anxiety neurotic and ten normals were given intravenous injections of three different substances: lactate, lactate with calcium (calcium can bind lactate into a physiologically inactive substance), and glucose. The results were that anxiety attacks were experienced by the subjects within a minute or two after the injection of lactate. With the lactate and calcium infusions, the subjects exhibited fewer anxiety

³³ E. T. Howley, "The Effect of Different Intensities of Exercise on the Excretion of Epinephrine and Norepinephrine," Medicine and Science in Sports, VIII (1976), pp. 219-222.

³⁴ F. N. Pitts and J. N. McClure, "Lactate Metabolism in Anxiety Neurosis," New England Journal of Medicine, CCLXXVII (1976), pp. 1329-1336.

³⁵ Yogi Ramacharaka, Hatha Yoga (Chicago: Yogi Publication Society, 1932), p. 235.

³⁶ Richard Markoff, Paul Ryan and Ted Young, "Endorphins and Mood Changes in Long Distance Running," Medicine and Science in Sports, XIV:I (1982), pp. 11-15.

symptoms and in those who received the glucose infusion, almost no symptoms were noted.³⁷

In the absence of oxygen, muscle cells break down glucose, or glycogen, its storage form, and extracts energy. Lactic acid, the byproduct of this process, is diffused into the blood and eventually resynthesized into glucose in the liver.³⁸ Research on the biochemistry of anxiety has shown that lactate, the product of anaerobic metabolism, plays a key role in producing anxiety symptoms.³⁹

Adrenaline speeds up lactate production by acting on the metabolic receptor sites of the cell surface to activate the cells of the glycolytic enzyme system.⁴⁰ Drugs, particularly propranolol, can be used to block the sites where adrenaline puts forth its nerve stimulating effect. Studies have shown, according to Ledwedge, that exercise also decreases lactate production during a maximum work load; therefore, aerobic exercise could possibly produce the same results.⁴¹

³⁷ Barry Ledwedge, "Run for your Mind: Aerobic Exercise as a Means of Alleviating Anxiety and Depression," Canadian Journal of Behavioral Science, XII:II (1980), pp. 126-139; Charles Kuntzleman, The Exercise Handbook (Spring Arbor, Maryland: Arbor Press, 1978), p. 116.

³⁸ Ledwedge, loc. cit.

³⁹ Ibid. ⁴⁰ Ibid.

⁴¹ Pitts and McClure, loc. cit.

Aerobic exercise contributes to this decrement in lactate production by promoting faster adaptation of the cardiorespiratory system to a specific work load and improved peripheral circulation during continuous exercise, both of which decrease the need for anaerobic metabolism.⁴²

Ismail and Young have listed several substances which are often associated with emotional disorders and suggest they might be affected by exercise. The list includes corticosteroids, glucose, cholesterol and androgens. Elevated cholesterol levels, for example, have been linked with feelings of depression, fear, competitiveness, aggression and extroversion.⁴³

Ransford quotes the current popular hypothesis that exercise may indirectly result in the release of enkephalins, which results in a feeling of euphoria, or more popularly called, the exerciser's high.⁴⁴ Enkephalin is a subunit of the newly discovered endorphins, whose effects are similar to those of morphine, thus the name, endorphin,

⁴² L. A. Larson and H. Michelman, International Guide to Fitness and Health (New York: Brown, 1973).

⁴³ A. H. Ismail and R. J. Young, "Effect of Chronic Exercise on the Multivariate Relationships Between Selected Biochemical and Personality Variables," Multivariate Behavior Research, XII (1977), pp. 45-54.

⁴⁴ Charles E. Ransford, "A Role for Amines in the Antidepressant Effect of Exercise: A Review," Medicine and Science in Sports, XIV:I (1982), pp. 1-10; B. Villet, "Opiates of the Mind," The Atlantic, CCXLI:VI (1978), pp. 82-89.

meaning morphine within. Since the discovery of endorphins, there have been various attempts to identify their functions. One idea suggested frequently is that they may serve as modulators of pain and mood.⁴⁵

The possibility that amines may be linked to depression has been also suggested by several investigators.⁴⁶ In general, they feel that depression can be associated with impaired transmission at specific aminergic synapses. Amines are chemicals secreted by neurons into the synapse or space between neurons and in this manner, transmit information to other nearby neurons. The major amines located in the brain are norepinephrine, dopamine and serotonin. Norepinephrine and dopamines are called catecholamines, while serotonin is an indoleamine; collectively, all are monoamines.⁴⁷ The neurons that secrete these monoamines originate initially in the stem of the brain in and around the reticular formation, the section involved in arousal and attention. The neurons which secrete norepinephrine or serotonin project to the hypothalamus, the limbic system and other structures. The neurons dealing with dopamine project

⁴⁵ Markoff, loc. cit.

⁴⁶ Ransford, op. cit., p. 6.

⁴⁷ Ibid., p. 5.

primarily to the basal ganglia. The basal ganglia, limbic system and hypothalamus, have all been found to have a major role in motor behaviors, emotional and motivational states.⁴⁸

It is also possible, according to Ransford, that the antidepressant effect of exercise has something to do with the alteration of the central amine activity. Michael offers the hypothesis that exercise may improve the body's adaptation to emotional stress by increasing the efficiency of the autonomic nervous system and the adrenal glands.⁴⁹ During stress, the adrenal cortex secretes corticosteroids. The adrenal medulla and the autonomic nervous system respond to stress by secreting epinephrine and norepinephrine.⁵⁰

The Effects of Exercise

Inactivity over a period of time is cumulative in effect. Without use, the body begins to break down. The tone and musculature have a great deal to do with the overall appearance of the body, which in turn has a great deal to do with the emotional well-being. Flaccid muscles make it difficult to feel a sense of self-confidence.⁵¹ Exercise

⁴⁸ Ibid.

⁴⁹ E. D. Michael, "Stress Adaptation Through Exercise," Research Quarterly, XXVIII (1957), pp. 50-54.

⁵⁰ Ransford, op. cit., p. 5.

⁵¹ Mary J. Reiter and Nancy Cato, Dynamic Posture and Conditioning for Women (Minneapolis: Burgess Pub., 1970).

will restore and enhance the body's appearance, sensations, and performances as well as extend the benefits equally to the mind and spirit.⁵² Joint stiffness, common even in young women, as well as many middle-aged women, is normally due to tensions in the muscles that surround the joints.⁵³

Exercise can benefit every system of the body in some manner. Aerobic exercise benefits the cardiovascular system, builds endurance, and slows down the degeneration of the muscular, skeletal and digestive systems.⁵⁴ Women can achieve and maintain endurance fitness into their 80's.

Evidence seems to suggest that for sheer mental pleasure and the release of depression, a strenuous physical workout is excellent. No matter what age the participant, exercise can perhaps get her back into the condition she would desire. Psychologically, as well as physically, an individual benefits by maintaining an aerobic program. Ledwedge feels that a psychological argument for the therapeutic benefits of exercise lies in the fact that aerobic exercise enhances the exerciser's self-esteem.⁵⁴ This enhancement of self-respect grows from two areas: 1) the

⁵² Sidi Hessel, The Articulate Body (New York: Saint Martin's Press, 1978), p. 1.

⁵³ Maggie Lettvin, The Beautiful Machine (New York: Ballantine Books, 1972), p. 11; Hessel, *op. cit.*, p. 10.

⁵⁴ Ledwedge, *loc. cit.*

visible improvement in the participant's bodily appearance, and 2) the sense of accomplishment that occurs when an individual faces a difficult task and overcomes it.

The body was built to last a lifetime. It's tragically true that many individuals become unfit and some even obese. Loss of movement and difficulty with weight control cause many individuals to become emotionally depressed. The fact that these conditions do not have to be final is exciting. Man feels that a loss of physical and emotional well-being can usually be reversed by engaging in a regular vigorous exercise program, no matter what the age of the woman.⁵⁵ Anxiety and depression may disappear as exercise sends energy (tension is trapped energy awaiting to be released) surging through the body tissues.⁵⁶

The immediate psychological effect of vigorous aerobic exercise includes a feeling of exhilaration, which may come from rapid and deep breathing.⁵⁷ A fast pumping heart, the stimulation of bodily movements, plus the changing sensation of the environment as the individual moves through space,

⁵⁵ Man, loc. cit.

⁵⁶ Caryle H. Falkins, "Physical Fitness Training and Mental Health," American Psychologist, XXXVI (1981), pp. 373-389; Man, op. cit., p. 187.

⁵⁷ Ken G. Goodrick and Nicholas K. Immarino, "Teaching Aerobic Lifestyles: New Perspectives," Journal of Physical Education, Recreation, and Dance, LIII (Jan., 1982), pp. 48-50.

all contribute to the effect of exhilaration. Increased blood flow to the brain and surging through the muscles causes a feeling of "aliveness," and invigoration that lasts for several hours after the actual exercise ceases.

Chronic fatigue, a common complaint of depressives, also seems to be relieved by exercise. Depressive fatigue and physical weariness differ, both in intensity and duration.⁵⁸ Slow sleep waves increase with exercise. Depressed individuals exhibit less slow-wave sleep than non-depressives.⁵⁹ For any given work load, the trained exerciser projects a lower heart rate, less muscular intensity, slower respiration and less accumulation of acid byproducts of exercise.⁶⁰

Increasing the ability to take in oxygen is another effect of exercise. It is possible to increase oxygen intake from 5-25%, depending on the intensity, frequency and duration of the exercise program.⁶¹

⁵⁸ Ledwedge, loc. cit.

⁵⁹ W. P. Morgan, "Psychological Consideration," Journal of Health, Physical Education, and Recreation, XXXIX (Nov.-Dec., 1968), pp. 66-28.

⁶⁰ Edward D. Greenwood, "Emotional Well-Being Through Exercise: Therapeutic Benefit for the Adult," The Humanistic and Mental Health Aspects of Sports, Exercise, and Recreation, ed. Timothy T. Craig (American Medical Asso., Publications, 1976), pp. 130-133.

⁶¹ Gerald Donaldson, The Walking Book (New York: Holt, Rinehart and Winston, 1979), p. 36.

Psychologically, it is useful to determine how exercise and emotional well-being come together. According to Hessel, physical activities can rejuvenate and revitalize the mind, as well as the body.⁶² If the body is perfectly relaxed, such as after exercise, experiments have proved that it is almost impossible to express negative thoughts, jealousy, insecurity, hatred, fear, or depression.⁶³ Exercise, then, may offer a source of emotional well-being by providing an acceptable means for resolving frustrations, relieving boredom, soothing the ego, and sublimating feelings of aggression.⁶⁴

Aerobic Dance and its Value

Cooper (1970) described aerobic exercise as activity consisting of moderate, sustained activity, that produces elevated levels of oxygen consumption over extended periods of time.⁶⁵ Cooper studied the responses of approximately 15,000 Air Force Cadets to aerobic conditioning. In that research, he measured the amount of oxygen consumed by the

⁶² Hessel, loc. cit.

⁶³ Naura Hayden, Everything You Always Wanted to Know About Energy, But Were Too Weak to Ask (New York: Hawthorn Books, 1976), p. 68.

⁶⁴ Kuntzleman, loc. cit

⁶⁵ Kenneth H. Cooper, Aerobics (New York: Bantam Books, 1968), p. 15.

body during various combinations of intensity and duration for each of the prescribed aerobic exercises; he reduced the oxygen consumption data to a single quantitative measurement, which he called the aerobic point. The aerobic point, as described by Cooper, is how much oxygen the body consumes during a specific activity for a specific duration.⁶⁶

Aerobic dance, a variation of Cooper's aerobic exercises, is a movement from which incorporates many dance styles, such as folk, ballet, rock, modern, and jazz.⁶⁷ A well developed aerobic dance program utilizes the same basic training principles and disciplines as outlined by Cooper and other leading exercise authorities.

The principles included in aerobic dance are the use of a large muscle mass, intensity, and duration sufficient to extend the normal performance of the cardiovascular and respiratory systems beyond the usual work load.

Aerobic dance is choreographed in such a manner that it can be performed at any of the three levels of intensity; 1) low, corresponding to the walking level; 2) medium,

⁶⁶ Ibid; Suzzane B. Gibson et al., "Writing the Exercise Prescription: An Individualized Approach," The Physician and Sportsmedicine XI:VII (July, 1983), pp. 87-110; James Skinner and Thomas H. McLellan, "The Transition from Aerobic to Anaerobic Metabolism" Research Quarterly, LI:I (March, 1980), pp. 234-248.

⁶⁷ Veronica Igbunugo and Bernard Gutin, "The Energy Cost of Aerobic Dancing," Research Quarterly, XLIX:III (October, 1978), pp. 308-16.

corresponding to the jogging level; 3) high, or peak, corresponding to the running level.⁶⁸ The individual is thereby offered the opportunity to perform as vigorously or as moderately as her potential capabilities allow. This, also, gives the participant the opportunity to increase her intensity at her own level of progression, while working within the realm of safety.⁶⁹ Individuals are all born with different levels of ability, but within each person's capabilities, there is a tremendous potential to attain.⁷⁰

Aerobic dance, when performed regularly and vigorously enough to raise the heart rate to the target zone, for 20-30 minutes, will gradually increase the lung capacity and strengthen the cardiovascular system. The body in this manner is trained to handle extra demands both physically and emotionally, which may enable the individual to function better under normal conditions.⁷¹

Dance has psychological as well as physical benefits. Dance exercise is an exciting method of helping the exercisers

⁶⁸ Ibid.; Jacki Sorensen, Aerobic Dancing (New York: Rawson, Wade, 1979), pp. 10-11; Kuntzleman, loc. cit.; Holt, loc. cit.

⁶⁹ Igbanugo, loc. cit.

⁷⁰ Jane Katz, Swimming for Total Fitness (New York: Dolphin Books, 1981), p. 17.

⁷¹ Ibid., p. 3.

develop poise, new friendships, posture improvement, flexibility, strength, endurance, and agility, all building blocks toward building self-confidence, self-esteem, and relieving depression.

Throughout the ages, dance has had specific therapeutic uses. Tribal leaders, shaman and medicine men believed it would cure anything! Therapists in private practice and on some institutional staffs work with patients to help them integrate themselves physically, mentally, and emotionally through dance. Dance allows participants the luxury of forgetting themselves.⁷²

A dance exercise class, a group situation, is more fun than exercising alone, according to Dr. Joyce Brothers. An aerobic class doesn't require scores, or winning, which omits the tensions and depression that sometimes may accompany challenging and losing, such as in some sports.⁷³ Since each of us is separate, alone, and powerless, we must seek new ties with other human beings. Fromm, according to Schultz, speculates that satisfaction of this need to relate to others is vital for psychological health.⁷⁴

⁷² Rebecca Christian, "Dancing, A Wonderful Way to Firm Up Your Body," Pretty Body, I:I (Spring/Summer, 1981), pp. 87-9.

⁷³ Joyce Brothers, Better Than Ever (New York: Simon and Schuster, 1975), p. 94.

⁷⁴ Duane Schultz, Growth Psychology (New York: Reinhold Co., 1977), p. 43.

Dance has been described as life, enjoyment, ecstasy, rhythm, and history. Throughout civilization, men and women have danced. On the frontier, when time and circumstances permitted, the settlers engaged in dancing for enjoyment, relaxation, and a feeling of self-establishment. People have danced for lack of entertainment, to help cope with sadness, misery and for the natural enjoyment of movement and interpretation.⁷⁵

Goals

An exercise program will be meaningless after awhile, if there is no goal to reach . . . furthermore, the goal or goals must be important to the individual to gain results from an exercise program. The demands must be sufficient, according to Jenner, to force adaptation to a regular health and fitness regimen.⁷⁶ All human behavior is motivated by a desire to maintain and enhance the self. Katz, however, suggests that the fact that something is good for one, isn't really enough to keep the individual involved. She feels that the women will be searching for excuses for

⁷⁵ Dennis Fallon, "Disco Dance," Journal of Physical Education and Recreation, L (June, 1979), pp. 76-7.

⁷⁶ Bruce Jenner, Bruce Jenner on Physical Fitness (Maywood, NJ: AMF, n.d.), p. 7.

stopping the program, unless the design of the program proves to contribute to the enjoyment of the endeavors.⁷⁷

Reasonable goals and progressions may help develop a more favorable attitude toward physical activities. The ability to set goals and achieve them seems to have a carry-over effect into other parts of the person's life, thereby increasing self-confidence and a feeling of both emotional and physical control.⁷⁸

Lettvin warns that it takes an unused body a while to realize what is happening to it; thus, one must be patient and consistent in the assigned physical activities, as the body strives to regain lost strength, flexibility, and tone.⁷⁹ Spino agrees that women keep in mind that an exercise program won't change the body or emotions overnight. He suggests better results will be achieved from a consistent step by step program with the whole body as a source of the vehicle, which slowly unwinds and exposes the new layers of both one's emotional as well as physical self.⁸⁰

⁷⁷ Katz, op. cit., p. 6

⁷⁸ George Holland and Elwood C. Davis, Values of Physical Activity (Dubuque, Iowa: Wm. C. Brown, Co., 1975) 3rd ed., p. 76; Pollock and Blair, loc. cit.

⁷⁹ Lettvin, op. cit., p. 11.

⁸⁰ Michael Spino, Running Home: The Body/Mind Family Fitness Book (Milbrae, CA: Celestial Arts, 1977), p. 7.

Three suggested factors to set up and maintain a successful exercise program are:⁸¹

- 1) There must be a desire and a will to improve.
- 2) There must be a planned method or discipline that is actively and consistently followed.
- 3) There must be patience to achieve many short range goals, rather than a single massive, miraculous, immediate improvement.

Aerobic fitness is now recognized as one of the major health goals of the nation. Women who participate in aerobic exercise programs, it is hoped, will learn to appreciate the intrinsic rewards resulting from such an exercise program and will continue to exercise as a life-time habit.⁸² An understanding of values of fitness in relationships to appearance, recognition from others, social acceptance and enjoyment in living, should instill in every woman the desire to be fit, no matter what her age.⁸³

Many women, it seems, have a manner of living in the future, or the past, but seldom in the present. Goals to be active in mind, heart, and body in the present are workable; negative injunctions and postponements of a planned exercise program never work.⁸⁴

⁸¹ Lettvin, op. cit., p. 2.

⁸² Goodrick, loc. cit.

⁸³ Man, op. cit., p. 1.

⁸⁴ Sheehan, op. cit., p. 49.

Goal aspirations and lifestyles are personal matters. Physical activity, content, and approaches should be designed and developed to include the unique, anatomical, physiological and kinesiological characteristics, and needs of women.⁸⁵ For the modern, middle-aged woman, exercise with realistic expectations about performance may offer a ready source of emotional well-being by providing an acceptable means for resolving frustrations, relieving boredom and depressions, and strengthening the ego and self-confidence.⁸⁶

Methods of Teaching a Program

Adult fitness programs, it seems, should be designed to develop and maintain cardiovascular respiratory fitness, flexibility, muscular strength and endurance.⁸⁷ Individuals with lower initial levels of fitness need to start at a lower level of intensity and endurance, especially since less fit and overweight individuals are more susceptible to injury.⁸⁸ Individuals in reasonably good health shouldn't have any trouble following a realistic exercise program,

⁸⁵ John Piscopo, "Indications and Contradictions of Exercise and Activity for Older Persons," Journal of Physical Education and Recreation, L (November-December, 1979), pp. 31-34.

⁸⁶ Greenwood, loc. cit.

⁸⁷ Ledwedge, loc. cit.

⁸⁸ Pollock and Blair, loc. cit.

provided they begin slowly and build up gradually. In any well-designed aerobic, endurance program, the exercise is graduated over sessions, so the body has a chance to adapt to the stress. The body learns to be strong through practice in working the muscles. Overload, fundamental to improving physical fitness, creates strength.⁸⁹

As participants train and begin to improve their fitness levels, they can begin to increase intensity. Little scientific evidence is available on methods of progression, but a general consensus seems to be a 10% maximum increase in intensity and duration per week.⁹⁰

Proper warming up and stretching may help prevent muscle and joint soreness and injury, plus, give the respiratory and circulatory systems a chance to adapt. A bit of muscle soreness is to be expected for those who exercise, in order to improve their level of fitness.⁹¹ Pain, not just stiffness, while or after exercise, is a signal that something is wrong.⁹² A carefully designed maintenance

⁸⁹ Michael Pollock, "How Much Exercise is Enough?" The Physician and Sportsmedicine (June, 1978), pp. 50-64.

⁹⁰ Ibid.

⁹¹ Earl Wallis and Gene A. Logan, Figure Improvement and Body Conditioning Through Exercise (Englewood Cliffs, NJ: Prentice-Hall, Inc., 1964).

⁹² Lettvin, op. cit., p. 9.

program should cause little, if any, soreness. To prevent achy muscles, exercise regularly to keep muscles in shape and retain their ability to get rid of waste products. Warm-up and cool-down activities help ease the muscles from a state of rest to activity and then back to rest.⁹³

Massage will ease already sore muscles, by releasing muscle tension, and assisting in removing accumulated toxins that cause muscle fatigue, as it improves circulation, which helps calm nerves, aids digestion and promotes a feeling of well-being.⁹⁴ Saunas, whirlpools, and steambaths dilate the blood vessels, enabling more blood to flow through the muscles. The excess blood flow helps carry away lactic acid, thus helping the sore muscles (caused when waste products such as lactic acid build up in the muscles) to recover more quickly.⁹⁵

To be effective, exercise must be engaged in regularly, such as three to five times a week and for sessions long enough to make the participant feel "quite tired," or slightly tired for the beginner.⁹⁶ Even though research

⁹³ Katz, op. cit., p. 310.

⁹⁴ Ibid.

⁹⁵ Ibid.

⁹⁶ Mike Oppenheim, "Oh, My Aching Back!" Woman's Day (April, 1981), pp. 62, 116-18.

indicates that exercise is sufficient at three to five times a week to either build or maintain an adequate level of fitness, Reiter and Cato suggest that many women need a daily period of exercise to instill a lasting habit pattern.⁹⁷

An effective exercise prescription is based on frequency, intensity, duration, mode of activity, and initial levels of fitness. Beware that some types of individuals such as depressed, neurotics, anxious, and extroverts do not perceive effort in the same manner as the normal person does.⁹⁸ Some suggested guidelines are:

Frequency - three to five days per week. Experience finds most adults cannot fit more than three or four days a week into their schedules for exercise. Plus, the amount of physical fitness improvement in exercising more than three to five days per week is minimal and is probably not worth the increased injury potential. (Injury levels also increase when duration is extended.)⁹⁹

⁹⁷ Mary Jo Reiter and Nancy Cato, Dynamic Posture and Conditioning for Women (Minneapolis, MN: Burgess Publishing, 1970), p. 41.

⁹⁸ Edmund J. Burke, "Individualized Fitness Program," Journal of Physical Education and Recreation, 1 (Nov.-Dec., 1979), pp. 35-7.

⁹⁹ Pollick, loc. cit.

Intensity - 60%-90% maximum heart rate. A safe and effective guide to follow is offered by Burke.¹⁰⁰

70% MAHR - Increase intensity, duration or both.

70%-80% MAHR - OK. Increase intensity once a month or more often, according to the individual.

85%-90% MAHR - Beware!

90% + MAHR - Danger zone. Decrease intensity, duration or both.

Studies show that the minimal threshold level for a training response should be 60% of the MAHR. For unfit, middle-aged, overweight women, the minimal training threshold may be as low or lower than 100-120 beats per minute.

Maximum oxygen uptake - 50%-80%. Maximum oxygen uptake (the aerobic capacity) is the largest amount of oxygen that can be utilized under the most strenuous exercise conditions. The maximum oxygen uptake value is controlled by heredity, but training will develop capacity. Maximum oxygen uptake varies approximately 20% when one is in or out of training. Although this can be reduced with age, age itself is not a deterrent for participating in endurance work.

Another rule of thumb is to keep exercise intensity at a comfortable level. Use the talk test; if the participant cannot talk, the exercise is too intense.

¹⁰⁰ Burke, loc. cit.

Duration - fifteen to sixty minutes of continuous exercise. Kuntzleman suggests fifteen to thirty minutes to improve fitness, thirty minutes to drop body weight, and forty-five to sixty minutes to reduce depression and anxiety.¹⁰¹

Mode. It appears that a variety of aerobic activities can be interchanged for improving and maintaining physical fitness, such as running, jogging, walking, bicycling, swimming, endurance sports, and aerobic dancing. Any activity which holds the interest of the participant and is of adequate intensity and duration is worthy of pursuit.

Group exercise is valuable for motivating participation and adherence to the program.¹⁰² To promote a behavioral change, it is necessary that the participants understand the value of the exercises they perform as well as the duration, frequency, and intensity levels necessary to obtain the desired results.

When to Exercise

Most available research indicates that menstruation itself is no reason to stop exercising. Women in general, who regularly exercise, suffer fewer of the discomforts

¹⁰¹ Kuntzleman, op. cit., p. 133.

¹⁰² Goodrich, loc. cit.

associated with menstruation, such as headaches, tension, depressions, severe cramps, and backaches. Studies have also shown that exercising five days prior to the onset of the menstrual period can off-set premenstrual tension and depression by ridding the body of excess water and sodium by sweating.¹⁰³

Unless special circumstances arise, there is absolutely no reason a woman can't exercise while pregnant. Exercise, in fact, assists the circulation, which benefits the growth of the fetus as it tones the muscles of the mother, insuring an easier delivery.¹⁰⁴

Common sense about when to exercise, or when not to exercise, is the best guide. Exercise should be avoided when the exerciser is experiencing a headache, fever, respiratory ailment, or an upset stomach.¹⁰⁵ Postponement of exercise is also advisable, if the exerciser has just consumed a hearty meal, or alcohol.¹⁰⁶

¹⁰³ Katz, op. cit., p. 312.

¹⁰⁴ Ibid.

¹⁰⁵ Lettvin, op. cit., p. 6.

¹⁰⁶ Sorensen, op. cit., p. 17.

CHAPTER 3

Methods and Procedures

The Instruments

Multiple Affect Adjective Check List. After considerable investigation, making inquiries, and seeking advice of authorities in both the fields of physical education and psychology, Zuckerman's and Lubin's Multiple Affect Adjective Check List, hereafter referred to as MAACL, was selected as the tool for measuring depression. The MAACL was designed to be self-administered and provides valid and reliable measures of three clinically negative affects: anxiety, 21 items; hostility, 28 items; and depression, 40 items. The MAACL contains 132 adjectives, alphabetically arranged, in three columns. Forty-three of the adjectives are not scored on any of the three scales. The adjectives with affective connotations, were collected from Gough's and Nowlis' lists, and from a thesaurus.¹ The adjectives were carefully selected to insure that the less than average intelligent person could understand the items. Occasionally, a subject may ask for a word to be clarified.

¹ Marvin Zuckerman, "The Development of an Affect Adjective Check List for the Measurement of Anxiety," Journal of Consulting Psychology, XXIV:V (1960), pp. 457-562.

If it is a question of ambiguity, the subject should be instructed to accept which ever meaning she prefers. In the case of noncomprehensibility, the word may be defined for the subject, with a simple and standard definition. Excessive requests could result in an invalid score. No item is scored on more than one scale.²

The MAACL was also designed to provide for the assessment both of basically stable traits as well as traits subject to change from day to day as results of stress, drugs, or external influences.³

Administration of the MAACL

The subjects were given the MAACL on the first day of the class meeting, and thereafter at three-week intervals, until six weeks had lapsed; a total of three tests were collected from each participating subject. Procedures for the test were explained to the group in the following manner:

1. Subjects were encouraged to mark the test rapidly.
2. Mark as many, or as few of the adjectives that most generally express the feelings of the subject.

² E. Lowell Kelly and Edwin I. Megaree, "MAACL" 7th Mental Measurement Yearbook, ed. Oscar K. Buras, I (New Jersey: The Gryphon Press, 1972), pp. 271-74.

³ Ibid.

3. Honest and open marking of adjectives was encouraged.

4. Subjects were instructed to select or design a symbol to be used instead of their names to be placed in the upper right hand corner of this and all other sheets to be turned in during the study. The selection of such a symbol is to insure a greater possibility of anonymity. The same symbol must be used each time the participants turn in any paper, chart, or sheet involved in this study.

Each symbol was privately assigned a number by the investigator, and a master sheet maintained to simplify record-keeping and computation.

5. Completed tests were deposited by the subjects into a group folder, placed beside the class sign-in sheet. The folder had "MAACL" marked in large letters on both sides of the folder, to avoid confusion.

Scoring. Before scoring the MAACL, the completed form was checked to make sure that all items or none of the items had been checked, which would result in an invalid test score. In scoring the test, "plus" items were scored if the subject checked them, while "minus" items were scored if the subject did not check them. This scoring method partially controlled the checking response influence. Key depression words of the MAACL are as follows:

Table 1
 Depression-Keyed Adjectives Used on the MAACL⁴

Plus	Minus
alone awful blue destroyed discouraged forlorn gloomy hopeless lonely lost low miserable rejected sad suffering sunk terrible tormented unhappy wilted	active alive clean enthusiastic fine fit free gay glad good healthy inspired interested lucky merry peaceful safe strong whole young

⁴ Marvin Zuckerman and Bernard Lubin, Manual for the Multiple Affect Adjective Check List (P. O. Box 7234, San Diego, CA, 92107: EDITS, 1965), p. 4.

To obtain the depression T Score from the raw score, the following table was used to plot the conversion:⁵

Table 2
Raw Score Conversions

Raw Score	T Score	Raw Score	T Score
0	30	21	69
1	32	22	71
2	34	23	73
3	36	24	75
4	38	25	77
5	40	26	79
6	41	27	81
7	43	28	82
8	45	29	84
9	47	30	86
10	49	31	88
11	51	32	90
12	53	33	92
13	55	34	94
14	56	35	95
15	58	36	97
16	60	37	99
17	62	38	101
18	64	39	103
19	66	40	105
20	68		

⁵ Ibid., p. 7.

Life Style Questionnaire

A three-page questionnaire, designed by the investigator, served as a source of background information on the subjects. The questionnaire, showing the subjects' selected symbols in the upper right hand corner, reported living style, educational background, family status, financial status, as well as past and present exercise habits. Stress and depression could be habitual, as well as increased by the pressure caused by the inability to cope with current lifestyles.⁶ This informational instrument was compared to the MAACL, showing the same symbol, to determine if depression could be more or less prevalent in the areas expressed in this questionnaire (Appendix C).

Shape-up Chart

Progress or lack of progress in the subjects' development of a more shapely body during the six weeks period of exercise was recorded weekly. Subjects were instructed to measure designated areas of the body with the same tape measure throughout the study, to decrease the probability of variance in measurement. Measurement was to be within the same hourly time slot on each designated measurement day. A copy of this chart can be found in Appendix D.

⁶ Carole F. Sloan, "Exercise, Fitness, and Life Style," Lecture, Women's Fitness Sports Medicine Workshop (Atlanta, GA: Georgia State University, September 24, 1982); Fredric

Food List Chart

A one-week chart for recording food intake was provided for each participant from both groups. The chart which also had a mood scale in the upper left hand corner allowed the subjects to match their moods with the type and amount of food consumed. There is a space in the upper right hand corner for the subject to place her symbol. See Appendix E.

Measurement, which might indicate a loss of inches, should keep the subjects from becoming discouraged if they did not show a rapid weight loss (if that was their goal). Subjects were constantly reminded that exercise builds muscle mass, as fat mass is burned, and muscle mass weighs more than fat mass.⁷ Subjects were therefore encouraged not to consider actual body weight as much as progress in attaining the desired appearance of a firmer, better articulating body.⁸ As increased exercise develops a stronger cardiovascular-respiratory system, it is believed that a feeling of well-being could expel the feelings of depression to some degree.⁹ An increasing ability to work

C. Appel, Understanding Your Body (London: Aldus Books, 1972), pp. 90-91.

⁷ Claudia C. Wilbourn, "Build the Curves That Count: How to Replace Fat with Muscle," Shape (Dec., 1982), pp. 59-62, 89-94; Ellington Darden, Especially for Women (New York: Leisure Press, 1977), p. 14.

⁸ Darden, op. cit., p. 15.

⁹ Mildred Cooper and Kenneth H. Cooper, Aerobics for

through the entire hour-long session without slowing down activities, as well as a faster recovery heart rate, denoted the progress being attained.¹⁰ Mood was recorded weekly along with the muscular measurement, as indicated by a mood scale at the bottom of the shape-up chart. This chart, designed by the investigator, was compared with the results of the MAACL, to determine if mood could improve as the body improved in shape, brought about by regular exercise.

Pulse Rate Check

Subjects spent the necessary time required during the first class session to become familiar with the carotid artery pulse rate check method. Location of the artery was done by placing the middle finger in the hollow behind the ear lobe of either ear, sliding the tip of the finger down the side of the neck to one inch below the jawline, and gently holding the finger tip over the carotid artery to proceed with the count.¹¹ It was important that undue

Women (New York: M. Evans and Company, 1972), pp. 22-23; Jacki Sorensen, Aerobic Dancing (New York: Rawson, Wade, 1979), pp. 10-11.

¹⁰ Sorensen, op. cit., p. 15.

¹¹ Beth A. Kuntzleman and Consumer Guide, The Complete Guide to Aerobic Dancing (New York: Beekman House, 1979, rev.), p. 11; Linda Holt, Aerobic in Action Instructor's Manual (Huntsville, AL: A.I.A., 1980), pp. 3-4.

pressure not be exerted.¹² Pulse rate was counted for 15 seconds, times four, to give the pulse rate for one minute's time. The instructor, holding a watch with a second hand, said, as follows:

"Get ready!"

"Start"

"Stop! --- Multiply your total by four."

The instructor made a check for verbal responses of the results to assist the subjects in becoming more familiar and comfortable with the carotid pulse rate check method.¹³

Subjects practiced counting resting heart rate pulse in teams of two. Subject "A" located and counted her own pulse; subject "B" then located and counted subject "A's" pulse and compared the results. If there was a count discrepancy greater than one (1), the exercise was repeated. If there was still a discrepancy after the second trial, the instructor assisted with individual attention to the students expressing difficulty. The entire operation was repeated as subject "B's" pulse was measured. Practice enabled the subjects to quickly locate the carotid artery and accurately count the pulse rate.

¹² William Couldry, "Carotid vs Radial Pulse Count," The Physician and Sportsmedicine, X:XII (December, 1982), pp. 67-72.

¹³ Holt, op. cit., p. 4.

Subjects

Experimental group. Approximately fifty middle-aged women of no particular ethnic, lifestyle, nor physical background were used as subjects for this study. The women were selected from the enrollment of an aerobic dance exercise class, instructed by the investigator. The same instructor conducted all classes, in order to standardize as much as possible all aspects of the course. Classes were held in Smyrna, Donelson, and Franklin, Tennessee, and were conducted in public gyms and church recreation halls. Ages of thirty to sixty years was the determining factor for selection of subjects, plus a willingness to participate on a regular basis.

Control group. A control group of women with similar backgrounds as the experimental group participated in filling out the same charts and tests. The control group of non-exercisers came from teachers and parents associated with the Franklin Special School System in Franklin, Tennessee, and from a women's organization at St. John's Lutheran Church in Donelson, Tennessee. The control group was not encouraged to change their lifestyles through better nutrition, exercise, or group participation and socialization in an exercise class.

The Class Session

Class sessions were conducted twice weekly with a full hour of activity at each session. All classes, after the initial class, began immediately at the designated hour with:

1. A flexibility routine to prepare the body for the vigorous aerobic activity to follow. These slow stretches performed to music took 3½ to 4 minutes.¹⁴

2. Warm-up routines to slowly raise the muscle temperature and gradually increase the heart rate. This section of the workout consisted of approximately two routines, and then a pulse rate check.

3. Peak, rhythmic routines and exercises were performed to a wide range of current music. The emphasis was on continuous motion, lasting for 20 to 30 minutes, as the heart rate increased toward its target zone. After each peak routine, or aerobic level exercise, the heart rate was monitored to insure safety for the subject and to cause the subject to be aware of the intensity of her effort in the workout.¹⁵

¹⁴ Sorensen, op. cit., p. 31.

¹⁵ Ibid.; Holt, loc. cit.

4. A slower, cool-down dance routine incorporating stretching with a gradual reduction in intensity heart rate to approach the recovery level of 120 or less. If the desired recovery rate of 120 or less was not attained within 5 minutes of the last dance routine, the instructor had the subjects walk to music, until the desired heart rate had been attained.¹⁶

Statistical Measures

Using the T-scores of the MAACL, the analysis of variance procedure was used to determine if there was a significant difference at the $>.05$ level of significance between the control group and the experimental group on the MAACL scores as a result of the experimental treatment.

A percentage comparison was used for the Life-Style Questionnaire, within and between the experimental and control group. The Life-Style, Shape-Up, and Food List charts were used to correlate and compare the lifestyle and behavior of each subject with the MAACL scores for depression, thus supplying additional input as to the possible causes and methods of overcoming depression in the middle-aged woman.

¹⁶ Sorensen, loc. cit.; Holt, loc. cit.

CHAPTER 4

Analysis of the Data

Introduction

This study was conducted to determine the effects of aerobic exercise on the depression level of middle-aged women. In order to test the null hypothesis that aerobic dance exercise had no significant effect on middle-aged women, data were collected at the beginning, mid-session, and at the completion of a six-weeks experimental aerobic exercise program. The data collected in this investigation consisted of: 1) Multiple Affect Adjective Check List, by Zuckerman and Lubin; 2) A Life-Style Questionnaire; 3) Food List Chart; and 4) A Shape-Up Chart. Items 2, 3, and 4 were designed by this investigator.

Statistical Analysis

A one-way analysis of variance was utilized to determine if there was a significant difference in the MAACL scores at the $>.05$ level of significance as a result of the experimental treatment, which was used to obtain an analysis of variance as shown in Table 3.

An F-ratio of 4.00 is required in order to have significance at the $>.05$ level. Since the obtained F-ratio of 49.69 is well above that required for significance, the

null hypothesis can be rejected and the conclusion can be reached that a six-week aerobic program will reduce depression levels.

Table 3
Results of Analysis of Variance Test
Based on MAACL Test Scores

	df	SS	MS (V)
Between Means	1	4865.9	3865.9 ^{xxx}
Within Classes	68	6659.47	97.93
Total	69	11525.37	

$$F = \frac{4865.9}{97.93} = 49.69^{\text{xxx}}$$

The Life-Style Questionnaire, the Food List Chart, and the Shape-Up Chart provided additional information of the subjects' behaviors, habits, and lifestyles, which collectively or individually could possibly have some bearing on the depression level of middle-aged women. The questions (shown in tables 4 and 5) from the Life-Style Questionnaire, were designed to give an overall impression of the women's attitudes toward exercise and their backgrounds.

Table 4
The Life-Style Questionnaire Results

Response Options	Experimental Group	Control Group
Do you believe in exercise?		
Yes	100%	100%
No	-	-
No Response	-	-
Have you exercised regularly in the past?		
Yes	54%	55%
No	42%	45%
No Response	4%	-
Did/Do your parents exercise regularly?		
Yes	24%	30%
No	72%	60%
No Response	4%	10%
How frequently do you exercise?		
Never	-	45%
Less than once a week	-	35%
Once a week	8%	15%
Twice a week	45%	-

Table 4 (continued)

Response Options	Experimental Group	Control Group
How frequently do you exercise? (continued)		
Three times a week	24%	-
Four times a week	10%	-
Five times a week	8%	-
Over five times a week	2%	-
How long do you exercise at each session?		
Less than 10 minutes	-	15%
10-14 minutes	-	5%
15-19 minutes	2%	35%
20-29 minutes	6%	-
30-44 minutes	22%	-
45-60 minutes	62%	-
Over 60 minutes	8%	-
What method of exercise do you generally engage in?		
Calisthenics	14%	-
Jumping Rope	8%	-
Dance Exercise	82%	15%
Weight Lifting	8%	-
Swimming	32%	-

Table 4 (continued)

Response Options	Experimental Group	Control Group
What method of exercise . . .? (continued)		
Bicycle riding	6%	-
Running/jogging	20%	-
Walking	32%	40%
Social Dance	18%	-
Why did/would you join an exercise class?		
To shape up	90%	40%
Lose weight	54%	50%
To relax	32%	20%
To have a night out	10%	5%
Meet new people	20%	5%
To feel better	72%	35%
Develop cardiovascular fitness	36%	25%
Friends joined	24%	-
Convenient location	18%	15%

Table 4 (continued)

Response Options	Experimental Group	Control Group
What reasons do/may keep you from attending a regular exercise class?		
Program too hard	4%	-
Results not evident	12%	-
Scheduling Overload	32%	45%
Mentally tired	10%	5%
Physically tired	24%	30%
Family Activities	56%	30%
Depressed	8%	-
Illness	58%	-
Bored	8%	-
No response	8%	-
Other	-	15%

The experimental group, due to its program of aerobic exercise, was asked to specify the degree of difference noticed since beginning the program. The results are shown in the following table:

Table 5
Degree of Difference in General Characteristics and
Behaviors Due to Exercise

Characteristics or Behaviors	A Big Difference	A Small Difference	No Difference
Attitude in general	40%	40%	10%
Stamina and/or energy	56%	32%	4%
Mental abilities	10%	48%	30%
Physical abilities	28%	54%	8%
Emotional well-being	30%	58%	6%
Physical well-being	30%	42%	10%
Self-concept	44%	32%	10%
Pride in appearance	46%	44%	6%
Social relationships	8%	40%	36%
Marital Relationship	8%	28%	44%
Sexual Relationship(s)	8%	28%	44%

MAACL Results

The MAACL T-scores for both the experimental group and the control group were ranked from least to greatest, according to the pretest scores. Marital status, family income, education, and profession were listed with each subject's MAACL T-score for comparison. See tables 10 and 11 in Appendix H.

A comparison of items comprising the depression scores for the MAACL is listed and compared by percentage. The pretest, posttest, and their differences are listed in Table 9 in Appendix G. MAACL depression T-scores for the experimental group showed a progressive difference ranging from 2% to 32% improvement on all except 4 adjectives, and they retained the same percentage.

Scores for the control group showed regression on eleven items on the MAACL T-scores, ranging from 5% to 10%. Fourteen items remained the same, while a progressive difference ranging from 5% to 15% improvement was shown on eighteen items. Table 1, on page 43, lists the depression keyed positive and negative adjectives in alphabetical order.

The MAACL depression score was determined by items marked by subjects as the adjectives most generally depicting their feelings. A point was counted off for each negative item marked, or for each failure to mark a positive adjective. The raw score was then converted to a T-score.

Food List Chart Results

A one-week food list chart was provided for each subject to assist them in becoming more aware of their eating habits. Seventy-eight percent of the experimental group and 50% of the control group recorded their food intake

and returned the chart. Approximately 50% of the returned charts listed a balance of food from the four basic food groups. Approximately 20% listed just black coffee, or nothing at all for breakfast. No lunch one or two days of the week was shown by approximately 20%. It seems evident that 50% or more of the subjects either lacked knowledge or chose to ignore basic nutritional rules, which seems to be more evident in the experimental group. A copy of the Food List Chart can be located in Appendix E.

Shape-Up Chart Results

A shape-up chart for the benefit of the participating subjects was used to enable the women to keep up with the amount of weight or the number of inches lost or gained during the six-week experimental period. These charts were to be recorded weekly at home and returned at the end of the experimental period. Seventy percent of the exercising group recorded and returned the shape-up chart. An example of the Shape-up Chart is located in Appendix D.

CHAPTER 5

Summary, Conclusions, and Recommendations

The Problem

The purpose of this study was to determine if consistent planned exercise would alleviate the depression level in middle-aged women of various backgrounds and lifestyles, and to analyze and interpret the results.

Fifty middle-aged females in organized aerobic exercise classes served as the experimental group for this investigation. Twenty middle-aged females who were not engaged in an exercise program served as the control group. The experimental group regularly attended and participated in a 60-minute aerobic exercise class twice a week. The control group followed their normal daily routine, which did not include exercise. The experimental period lasted 6 weeks. At the beginning, mid-session, and at the end of the experimental period, the subjects were requested to fill out the MAACL. They also filled out a Life-Style Questionnaire, a Shape-Up Chart, and recorded their food intake for a period of one week on a Food List Chart.

The analysis of variance was used to determine if there was a significant difference at the $>.05$ level within

and between the two groups on the MAACL score for depression. A percentage computation was used for the Life-Style Questionnaire to compare the results within and between the two groups. Food lists and Shape-Up Charts were mainly provided for the benefit of the subjects, as well as to provide additional insight into the subjects' lifestyles and behaviors.

Conclusions and Recommendations

Results of this study show that aerobic exercise is an effective method of alleviating depression in middle-aged women. After reviewing the data, it appears that an aerobic exercise program for middle-aged women does have a tendency to assist them in developing a healthier outlook on life, greater self-confidence, a better performing body, with a lower resting and faster recovery heart rate, as well as an increase in both normal and work-out energy levels. Based on the findings of this study, it is recommended that:

1. More research be initiated to determine the effect and value of exercise classes correlated with a nutritional program.

2. A similar investigation with provisions devised to evaluate the subjects at the end of one year periods for five consecutive years.

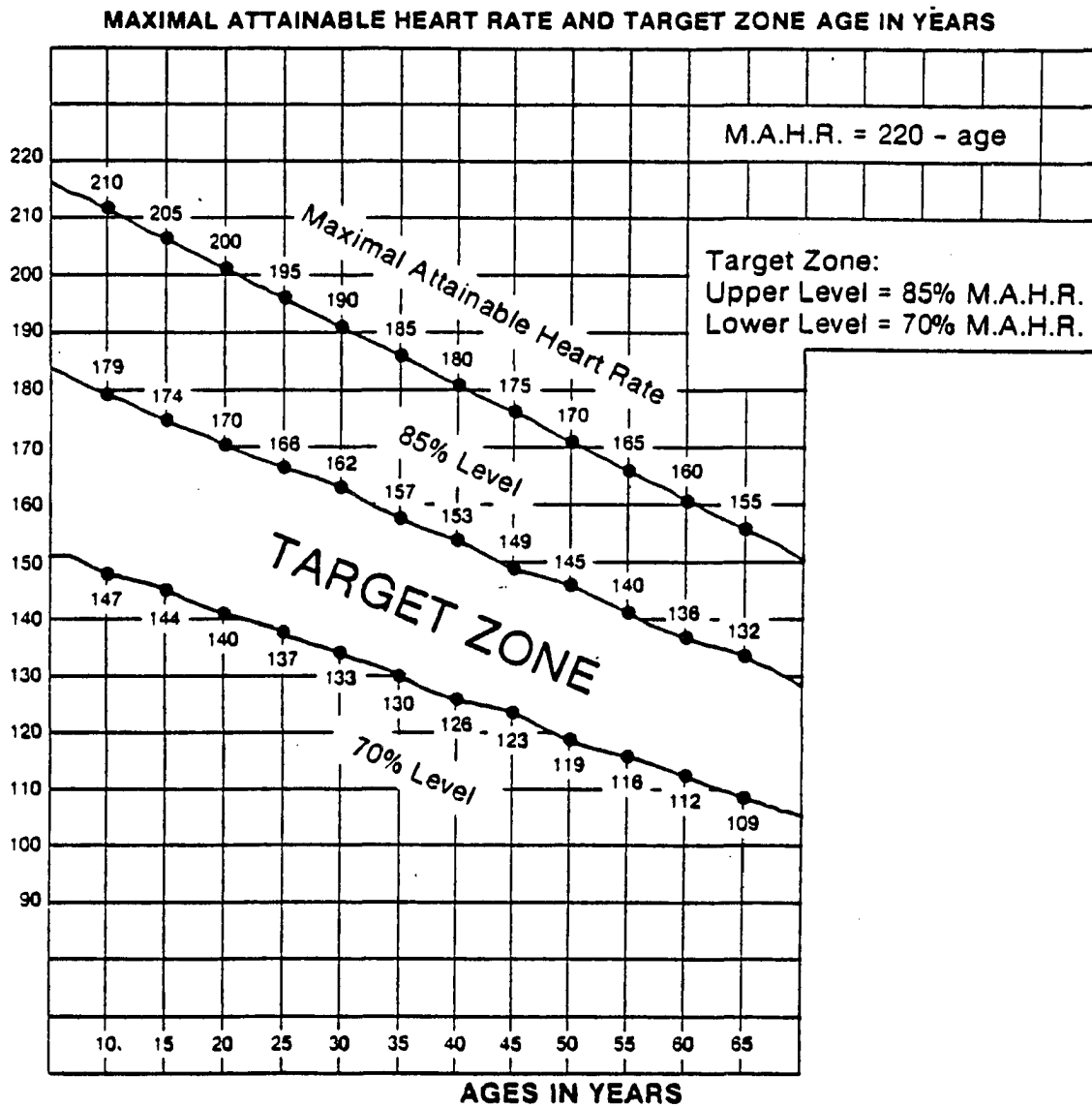
3. A modified investigation similar to this one be conducted with women older than the range for middle-aged set in this study.

4. To improve data collection, all Shape-Up Charts be recorded and kept in file folders with class records at the site of the class sessions because subjects forget to return them, as well as forget to measure and record unless reminded.

APPENDICES

APPENDIX A
Target Zone Chart

Table 6
Target Zone Chart



APPENDIX B

Multiple Affect Adjective Check List

- | | | |
|--|--|--|
| 1 <input type="checkbox"/> active | 45 <input type="checkbox"/> fit | 89 <input type="checkbox"/> peaceful |
| 2 <input type="checkbox"/> adventurous | 46 <input type="checkbox"/> forlorn | 90 <input type="checkbox"/> pleased |
| 3 <input type="checkbox"/> affectionate | 47 <input type="checkbox"/> frank | 91 <input type="checkbox"/> pleasant |
| 4 <input type="checkbox"/> afraid | 48 <input type="checkbox"/> free | 92 <input type="checkbox"/> polite |
| 5 <input type="checkbox"/> agitated | 49 <input type="checkbox"/> friendly | 93 <input type="checkbox"/> powerful |
| 6 <input type="checkbox"/> agreeable | 50 <input type="checkbox"/> frightened | 94 <input type="checkbox"/> quiet |
| 7 <input type="checkbox"/> aggressive | 51 <input type="checkbox"/> furious | 95 <input type="checkbox"/> reckless |
| 8 <input type="checkbox"/> alive | 52 <input type="checkbox"/> gay | 96 <input type="checkbox"/> rejected |
| 9 <input type="checkbox"/> alone | 53 <input type="checkbox"/> gentle | 97 <input type="checkbox"/> rough |
| 10 <input type="checkbox"/> amiable | 54 <input type="checkbox"/> glad | 98 <input type="checkbox"/> sad |
| 11 <input type="checkbox"/> amused | 55 <input type="checkbox"/> gloomy | 99 <input type="checkbox"/> safe |
| 12 <input type="checkbox"/> angry | 56 <input type="checkbox"/> good | 100 <input type="checkbox"/> satisfied |
| 13 <input type="checkbox"/> annoyed | 57 <input type="checkbox"/> good-natured | 101 <input type="checkbox"/> secure |
| 14 <input type="checkbox"/> awful | 58 <input type="checkbox"/> grim | 102 <input type="checkbox"/> shaky |
| 15 <input type="checkbox"/> bashful | 59 <input type="checkbox"/> happy | 103 <input type="checkbox"/> shy |
| 16 <input type="checkbox"/> bitter | 60 <input type="checkbox"/> healthy | 104 <input type="checkbox"/> soothed |
| 17 <input type="checkbox"/> blue | 61 <input type="checkbox"/> hopeless | 105 <input type="checkbox"/> steady |
| 18 <input type="checkbox"/> bored | 62 <input type="checkbox"/> hostile | 106 <input type="checkbox"/> stubborn |
| 19 <input type="checkbox"/> calm | 63 <input type="checkbox"/> impatient | 107 <input type="checkbox"/> stormy |
| 20 <input type="checkbox"/> cautious | 64 <input type="checkbox"/> incensed | 108 <input type="checkbox"/> strong |
| 21 <input type="checkbox"/> cheerful | 65 <input type="checkbox"/> indignant | 109 <input type="checkbox"/> suffering |
| 22 <input type="checkbox"/> clean | 66 <input type="checkbox"/> inspired | 110 <input type="checkbox"/> sullen |
| 23 <input type="checkbox"/> complaining | 67 <input type="checkbox"/> interested | 111 <input type="checkbox"/> sunk |
| 24 <input type="checkbox"/> contented | 68 <input type="checkbox"/> irritated | 112 <input type="checkbox"/> sympathetic |
| 25 <input type="checkbox"/> contrary | 69 <input type="checkbox"/> jealous | 113 <input type="checkbox"/> tame |
| 26 <input type="checkbox"/> cool | 70 <input type="checkbox"/> joyful | 114 <input type="checkbox"/> tender |
| 27 <input type="checkbox"/> cooperative | 71 <input type="checkbox"/> kindly | 115 <input type="checkbox"/> tense |
| 28 <input type="checkbox"/> critical | 72 <input type="checkbox"/> lonely | 116 <input type="checkbox"/> terrible |
| 29 <input type="checkbox"/> cross | 73 <input type="checkbox"/> lost | 117 <input type="checkbox"/> terrified |
| 30 <input type="checkbox"/> cruel | 74 <input type="checkbox"/> loving | 118 <input type="checkbox"/> thoughtful |
| 31 <input type="checkbox"/> daring | 75 <input type="checkbox"/> low | 119 <input type="checkbox"/> timid |
| 32 <input type="checkbox"/> desperate | 76 <input type="checkbox"/> lucky | 120 <input type="checkbox"/> tormented |
| 33 <input type="checkbox"/> destroyed | 77 <input type="checkbox"/> mad | 121 <input type="checkbox"/> understanding |
| 34 <input type="checkbox"/> devoted | 78 <input type="checkbox"/> mean | 122 <input type="checkbox"/> unhappy |
| 35 <input type="checkbox"/> disagreeable | 79 <input type="checkbox"/> meek | 123 <input type="checkbox"/> unsociable |
| 36 <input type="checkbox"/> discontented | 80 <input type="checkbox"/> merry | 124 <input type="checkbox"/> upset |
| 37 <input type="checkbox"/> discouraged | 81 <input type="checkbox"/> mild | 125 <input type="checkbox"/> vexed |
| 38 <input type="checkbox"/> disgusted | 82 <input type="checkbox"/> miserable | 126 <input type="checkbox"/> warm |
| 39 <input type="checkbox"/> displeased | 83 <input type="checkbox"/> nervous | 127 <input type="checkbox"/> whole |
| 40 <input type="checkbox"/> energetic | 84 <input type="checkbox"/> obliging | 128 <input type="checkbox"/> wild |
| 41 <input type="checkbox"/> enraged | 85 <input type="checkbox"/> offended | 129 <input type="checkbox"/> willful |
| 42 <input type="checkbox"/> enthusiastic | 86 <input type="checkbox"/> outraged | 130 <input type="checkbox"/> wilted |
| 43 <input type="checkbox"/> fearful | 87 <input type="checkbox"/> panicky | 131 <input type="checkbox"/> worrying |
| 44 <input type="checkbox"/> fine | 88 <input type="checkbox"/> patient | 132 <input type="checkbox"/> young |

APPENDIX C
Life-Style Questionnaire

LIFE-STYLE QUESTIONNAIRE

1. Do you believe exercise is important? . . Yes () No ()
 2. Do you belong to an exercise group? . . . Yes () No ()
 3. Have you exercised on a regular basis
in the past? Yes () No ()
 4. Did/Do your parents exercise on a
regular basis? Yes () No ()
 5. Do you believe other family members
would benefit from a regular exercise
program? Yes () No ()
 6. Do you exercise regularly now? Yes () No ()
-
7. How frequently do you exercise?
 Less than once a week . . () Four times a week. . . ()
 Once a week () Five times a week . . ()
 Twice a week () Over five times a
 Three times a week . . . () week ()
 8. How long do you generally exercise at each session?
 Less than 10 minutes . . () 30-44 minutes . . . ()
 10-14 minutes () 45-60 minutes . . . ()
 15-19 minutes () Over 60 minutes . . ()
 20-29 minutes ()
 9. What method of exercise do you generally engage in?
 Calisthenics . . . () Weight Lifting . . . ()
 Jumping Rope . . . () Swimming ()
 Dance exercise . . () Bicycle Riding . . . ()
 Running/jogging . . () Walking ()
 Social Dancing . . () Other (please specify) _____
 10. Why would you, or did you decide to join an exercise
class? Mark all that apply.
 To shape up () To feel better . . . ()
 Lose weight () Develop cardiovascular ()
 To relax () My friends joined . ()
 Have a night out () Convenient location ()
 Meet new people () Other _____
 11. If you belong to an exercise program or class, could it
be improved? If so, in what way? _____
-
12. In your opinion, do you get adequate instruction from
your instructor? Yes () No () (Please specify)
-

13. What reasons may keep you from attending a regular exercise program? Mark as many as apply.
- Program too hard . . . () Family activities . . . ()
 Program too easy . . . () Depressed ()
 Results not evident . . . () Illness ()
 Scheduling overload . . . () Bored ()
 Mentally tired () Other ()
 Physically tired . . . () Please specify _____

14. Mark the changes you have noticed, if any, since you began a regular exercise program. Mark all which apply and give a brief comment if you wish.

	A BIG DIFFERENCE	A SMALL DIFFERENCE	NO DIFFERENCE
Attitude in general	()	()	()
Stamina and/or energy	()	()	()
Mental abilities	()	()	()
Physical abilities	()	()	()
Emotional well-being	()	()	()
Physical well-being	()	()	()
Self-concept	()	()	()
Pride in appearance	()	()	()
Social relationships	()	()	()
Marital relationship	()	()	()
Sexual relationship(s)	()	()	()
Other (please specify) _____			

15. What is your: Resting Heart Rate(____)-1
 Height(____)-2 Weight(____)-3

16. What is your approximate age?
- | | | |
|--------------------|-----------------|-------------------|
| Under 18 . . . () | 35-39 . . . () | 55-59 . . . () |
| 18-24 . . . () | 40-44 . . . () | 60-64 . . . () |
| 25-29 . . . () | 45-49 . . . () | 65-69 . . . () |
| 30-34 . . . () | 50-54 . . . () | 70-74 . . . () |
| | | 75 plus . . . () |

17. What is your marital status?
- | | |
|-------------------------|----------------------|
| Never married . . . () | Divorced . . . () |
| Married () | Re-married . . . () |
| Widowed () | |

18. Do you live in an: Urban area () Rural area ()

19. Do you live in a: Single family home ()
 Condominium () Apartment ()

20. Do you: Rent () Own ()
21. How many persons live in your household? _____
22. How many are children? _____
23. Are you:
 Employed full-time . . . ()
 Employed part-time . . . ()
 Not employed ()
 Homemaker ()
 Retired ()
 Student ()
24. What is your occupation? _____
25. If applicable, is your spouse:
 Employed full-time . . . ()
 Employed part-time . . . ()
 Not employed ()
 Retired ()
 Student ()
26. What is your spouse's occupation? _____
27. What is your household's approximate total annual income?
 Less than \$10,000 . . . () \$30,000-\$39,000 . . . ()
 \$10,000-\$14,000 . . . () \$40,000-\$49,000 . . . ()
 \$15,000-\$19,000 . . . () \$50,000-\$59,000 . . . ()
 \$20,000-\$24,000 . . . () Over \$60,000 ()
 \$25,000-\$29,000 . . . ()
28. What is the last year of school that you have completed?
 Less than High School . () Completed a College
 High School () Degree ()
 Attended College () Post-graduate work . . ()

APPENDIX D
Shape-Up Chart

SHAPE-UP CHART

Beginning Weight _____ Weight Goal _____ Starting Date _____ Target Date _____

How many pounds do I need to lose weekly? _____ Type of Diet _____

BODY MEASUREMENTS

Body Area	Starting	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Wrist							
Bust							
Waist							
Hips							
R.Arm							
L.Arm							
R.Thigh							
L.Thigh							
R.Knee							
L.Knee							
R.Calf							
L.Calf							
Chest (under arms)							
Mood							

Mood Scale: (1-Happy)(2-Elated)(3-Slightly Depressed)(4-Heavily Depressed)(5-Angry)(6-Bored)
 (7-Frustrated)(8-Worried)(9-Disappointed)(10-Successful) MARK AS MANY AN APPLY

APPENDIX E
Food List Chart

Mood Level: (1) Very Depressed (2) Depressed (3) Slightly Depressed
 (4) Neither (5) Mildly Elated (6) Elated (7) Very Elated
 (8) Angry (9) Tired (10) Bored

Symbol I.D.

	Breakfast	Mood	Lunch	Mood	Dinner	Mood	Snacks
M O N							
T U E							
W E D							
T H U							
F R I							
S A T							
S U N							

APPENDIX F
Symbol Charts

Table 7
Experimental Group Symbol Chart














Assigned Number	Self-Selected Symbol	Assigned Number	Self-Selected Symbol
1		12	
2		13	MH
3	AE	14	34-24-34
4	BB	15	JC
6*		16	
7	72	17	A.O.X.
8		18	
9		19	
10		20	
11		21	

Table 7 (continued)







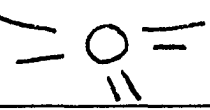


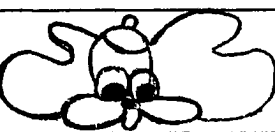
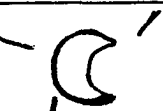




















Assigned Number	Self-Selected Symbol	Assigned Number	Self-Selected Symbol
22		32	
23		33	s.k.
24		35*	Sadie
25		36	PEANUT
26	"Rosebud"	37	
27		38	TF
28		39	2926
29		40	
30	J. T.	42*	
31		43	

Table 7 (continued)

Assigned Number	Self-Selected Symbol	Assigned Number	Self-Selected Symbol
44	me me	49	
45		50	@
46	TOM	51	
47		52	
48	514	53	SWR

*Information was taken from 53 subjects in the experimental group, to insure 50 complete sets of 3 MAACL scores being completed.

Table 8
Control Group Symbol Chart

Assigned Number	Self-Selected Symbol	Assigned Number	Self-Selected Symbol
101		111	Slims
102		112	12
103		113	PeeWee
104		114	-★-
105		115	SV
106		116	CeCe
107		117	
108		118	
109		119	
110		120	"Dimi"

APPENDIX G

Comparison of Items Comprising the
Depression Score for MAACL

Table 9
Comparison of Items Comprising the
Depression Score for MAACL

Adjective	Experimental Group			Control Group		
	Test 1	Test 2	D*	Test 1	Test 2	D*
Active	62%	84%	22%	55%	65%	10%
Alive	60%	70%	10%	40%	50%	10%
Alone	18%	8%	10%	15%	20%	-5%
Awful	4%	0%	4%	5%	5%	0%
Bashful	30%	22%	8%	30%	25%	5%
Bitter	10%	4%	6%	15%	15%	0%
Blue	10%	0%	10%	40%	35%	5%
Bored	28%	14%	14%	30%	35%	-5%
Clean	94%	90%	-4%	90%	90%	0%
Destroyed	0%	0%	0%	0%	5%	-5%
Discouraged	14%	8%	6%	20%	30%	-10%
Fine	58%	76%	18%	40%	45%	5%
Fit	18%	44%	26%	10%	15%	5%
Forlorn	0%	0%	0%	5%	10%	-5%
Free	32%	46%	14%	25%	25%	0%
Glad	48%	54%	6%	40%	40%	0%
Gloomy	8%	4%	4%	25%	15%	10%
Good	54%	66%	12%	70%	65%	-5%
Happy	62%	76%	14%	60%	65%	5%
Healthy	70%	88%	28%	55%	55%	0%

Table 9 (continued)

Adjective	Experimental Group			Control Group		
	Test 1	Test 2	D	Test 1	Test 2	D
Hopeless	4%	0%	4%	10%	0%	10%
Inspired	22%	36%	14%	30%	25%	-5%
Interested	60%	62%	2%	70%	75%	5%
Jealous	24%	16%	8%	30%	30%	0%
Lonely	14%	10%	4%	30%	25%	5%
Lost	4%	0%	4%	0%	0%	0%
Low	14%	2%	12%	15%	25%	-10%
Lucky	36%	46%	10%	35%	40%	5%
Miserable	8%	2%	6%	10%	10%	0%
Peaceful	42%	78%	36%	55%	55%	0%
Rejected	14%	6%	8%	30%	15%	15%
Sad	8%	2%	6%	25%	20%	5%
Safe	26%	44%	18%	65%	60%	-5%
Strong	28%	38%	10%	50%	45%	-5%
Suffering	2%	0%	2%	0%	0%	0%
Sunk	2%	2%	0%	0%	0%	0%
Terrible	0%	0%	0%	0%	0%	0%
Timid	20%	18%	2%	25%	20%	5%
Tormented	4%	0%	4%	10%	5%	5%
Unhappy	2%	0%	2%	15%	15%	0%
Whole	26%	36%	10%	30%	35%	5%

Table 9 (continued)

Adjective	Experimental Group			Control Group		
	Test 1	Test 2	D	Test 1	Test 2	D
Worrying	28%	12%	16%	30%	25%	5%
Young	46%	78%	32%	20%	15%	-5%

*Difference between Test 1 and Test 2.

APPENDIX H
MAACL Depression T-Scores

Table 10
 MAACL Depression T-Scores for the
 Experimental Group

Subject Number	T-Scores			D**	Marital Status	Family Income	Education	Profession
	Pre*	Mid	Post					
2	34	34	34	0	1	3	3	Key Punch Operator
49	34	32	32	2	2	9	4	Office Worker
7	38	36	34	4	4	1	1	*** Part Time
11	38	38	36	2	2	4	3	Homemaker
24	38	36	34	4	3	***	3	Secretary
36	38	36	34	4	2	5	2	Homemaker
42	38	34	34	4	2	3	4	Adv. Secretary
23	41	40	40	1	2	3	1	Homemaker
21	43	34	36	7	2	7	2	Homemaker
53	43	41	40	3	2	9	3	Service Rep.
18	45	45	43	2	1	2	4	Adv. Executive
28	45	45	43	2	2	6	2	Homemaker
43	45	43	36	9	5	6	3	Bank Teller

Table 10 (continued)

Subject Number	T-Scores			D**	Marital Status	Family Income	Education	Profession
	Pre*	Mid	Post					
44	45	43	43	2	2	6	3	Nursing Home Aide
46	45	41	41	4	2	9	4	Banker - Loans
47	45	49	40	5	4	2	3	Shop Manager
16	47	43	38	9	2	7	3	Kroger Cashier
35	47	40	34	13	2	6	2	Assembler
26	49	38	38	11	2	4	4	Purchasing Clerk
37	49	51	47	2	2	6	3	Raise Poodles
25	51	51	51	0	2	***	3	Homemaker
29	51	51	49	2	1	1	1	Motel Maid
48	51	49	40	11	2	6	3	Homemaker
10	53	43	36	17	2	8	2	Clerical
22	53	51	49	4	4	2	2	Computer Operator
50	53	53	47	6	1	7	5	Teacher
33	55	53	51	4	2	3	2	Homemaker

Table 10 (continued)

Subject Number	T-Scores			D**	Marital Status	Family Income	Education	Profession
	Pre*	Mid	Post					
39	55	38	55	0	2	4	2	Homemaker
31	56	56	56	0	2	6	2	Secretary
15	58	56	49	9	1	3	3	Executive Secretary
17	58	58	56	2	5	7	3	Secretary
20	58	53	47	11	2	7	3	Not Employed
6	60	60	58	2	2	7	3	Secretary
13	60	64	66	-6	2	9	3	Bookkeeper
14	60	40	38	22	5	2	1	Laid-off
38	62	56	56	6	2	5	3	Secretary
45	62	60	60	2	4	6	5	Teacher
32	62	49	47	15	4	3	4	Teacher
30	64	64	58	6	2	2	2	Motel Maid
52	64	62	62	2	2	7	3	Caterer
40	64	53	53	11	2	5	2	Retired; Homemaker

Table 10 (continued)

Subject Number	T-Scores			D**	Marital Status	Family Income	Education	Profession
	Pre*	Mid	Post					
51	64	64	56	8	2	6	5	Teacher
4	64	58	53	11	4	4	4	Nurse
27	66	49	43	23	2	***	2	Assembler
1	66	64	60	6	2	6	2	Secretary
8	66	66	58	8	4	1	2	Cargo Clerk
19	66	64	62	4	2	4	1	Plant Worker
12	68	68	62	4	2	3	3	Homemaker
3	69	62	55	14	4	3	2	Cosmetics Sales
9	75	73	66	9	4	3	2	Secretary

* Ranked least to greatest, compared to marital status, education and profession.

** Difference between pretest and posttest.

*** Not stated.

Marital Status: 1) Never Married; 2) Married; 3) Widowed; 4) Divorced; 5) Re-married.

Income: 1) Less than \$10,000; 2) \$10-\$14,000; 3) \$15-19,000; 4) \$20-24,000; 5) \$25-29,000; 6) \$30-39,000; 7) \$40-49,000; 8) \$50-59,000; 9) Over \$60,000.

Education: 1) Less than High School; 2) High School; 3) Attended College; 4) Completed College Degree; 5) Post-graduate Work.

Table 11

MAACL Depression T-Scores for the
Control Group

Subject Number	T-Scores			D**	Marital Status	Family Income	Education	Profession
	Pre*	Mid	Post					
118	34	38	34	0	2	9	3	Apartment Manager
105	34	36	38	-4	2	6	2	Homemaker
120	36	36	34	2	5	6	1	Homemaker
112	40	41	40	0	2	6	2	Homemaker
109	48	36	34	14	5	8	5	Teacher
116	43	41	43	0	2	7	5	Teacher
107	49	43	45	4	2	4	3	Secretary
111	49	51	51	-2	2	6	2	Factory Worker
119	51	51	56	-5	2	8	4	Teacher
104	58	60	56	2	2	6	2	Homemaker
106	60	60	58	2	2	5	1	Homemaker
110	79	31	41	38	2	2	1	Factory Worker

Table 11 (continued)

Subject Number	T-Scores			D**	Marital Status	Family Income	Education	Profession
	Pre*	Mid	Post					
117	64	66	66	-2	2	1	1	Nurse's Aide
115	64	58	58	6	2	9	3	Railroad Clerk
114	64	64	66	-2	2	6	2	Insurance Agent
103	66	71	71	-5	2	6	2	Retired
101	69	68	68	1	2	2	2	Service Rep.
113	84	84	86	-2	2	***	2	Homemaker
102	88	79	81	7	3	4	2	Homemaker
108	88	88	86	2	2	9	2	Homemaker

* Ranked least to greatest, compared to marital status, education and profession.

** Difference between pretest and posttest.

*** Not stated.

Marital Status: 1) Never Married; 2) Married; 3) Widowed; 4) Divorced; 5) Re-married.

Income: 1) Less than \$10,000; 2) \$10-\$14,000; 3) \$15-19,000; 4) \$20-24,000; 5) \$25-29,000; 6) \$30-39,000; 7) \$40-49,000; 8) \$50-59,000; 9) Over \$60,000

Education: 1) Less than High School; 2) High School; 3) Attended College; 4) Completed College Degree; 5) Post-graduate Work.

APPENDIX I

Exercises

STRETCHES

Flying Angel

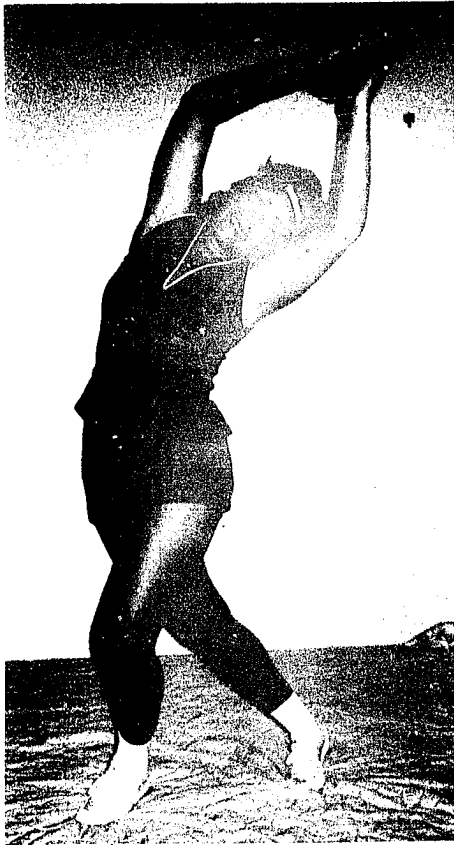
1. Stand with feet in wide straddle position.
2. Bend at hips, keeping back parallel to floor.
3. Extend arms out to the side at shoulder level.
4. Hold 4 counts.
5. Return to upright position.



Deep Bend Heel Raises

1. Stand in straddle position, with toes pointed outward, to the sides.
2. Place hands on hips and bend hips deeply.
3. Raise and lower both heels at the same time, keeping back straight. (16 times)





Touch and Go

1. Starting in straddle position, move left foot behind the body and far to the right, touch toe to floor.
2. Bend far to the right at waist and clap overhead, making sure upper arms are beside ears.
3. Repeat to left.

Heel Tap Swings

1. Tap right heel slightly forward and to the right. Bend left knee.
2. Swing both arms to the right, snap fingers.
3. Repeat to the left.



Side Pushes

1. Stand in straddle position with arms straight out to the sides at shoulder level.
2. Flex wrists and push to the right side, and then to the left side. Move at the waist.

Variation: Push 4 times to the right side, 4 times to the left side, 4 times.



Side Knee Lift

1. Start in straddle position, with hands behind head.
2. Hop on left foot, and bring right knee and elbow together at the side.
3. Hop on right foot, and bring left knee and elbow together at the left side. (8 times)



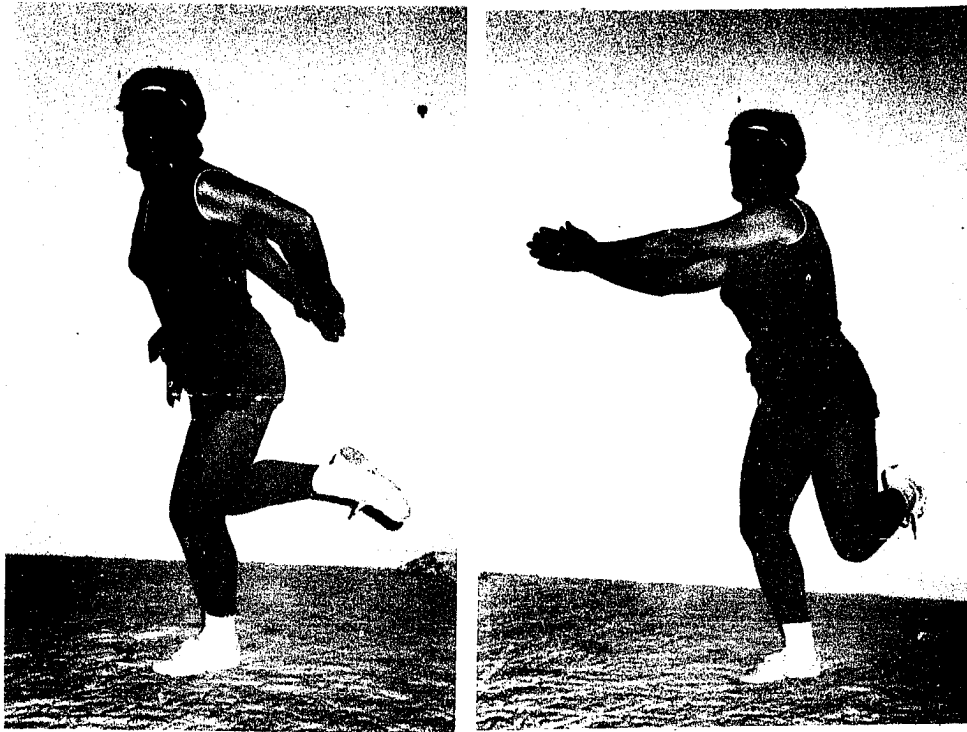
Elbow to Knee Bender

1. Start in wide straddle position, with hands behind head.
2. Bend knees deeply, and bend from side to side, touching right elbow to right knee, and left elbow to left knee. Keep body forward.



Kick Back

1. Start in straddle position.
2. Kick right heel behind body and toward left buttock, with toe pointed.
3. Swing hands behind back and clap.
4. Kick left heel behind body and toward right buttock, with toe pointed.
5. Swing hands around and clap in front of body.
6. Continue alternating kicks and swing claps.



Back Clasp

1. Standing in straddle position, clasp hands behind back.
2. Bend at hips, keeping back straight and parallel to floor.
3. Pull clasped hands toward head, count 4, lower hands.
4. Repeat step 3, 4 times.



Side Bend Clasp

1. Standing in straddle position, raise arms above head, with upper arms beside ears. Clasp hands.
2. Keeping back straight, bend to the right hold for 4 counts, bend to the left, hold for 4 counts.
3. Repeat step 2, 4 times.





Lean Back Clasp

1. Start in wide straddle position with clasped hands overhead.
2. Bend knees and lean backward, leading with clasped hands. Hold for 4 counts.
3. Return to position 1.
4. Continue.

Clasp Swing

1. Start in wide straddle position with hands clasped straight out in front of body at shoulder level.
2. Swing clasped hands from side to side at shoulder level.
3. Slightly bend knees with swing.



Windmill

1. Start in straddle position.
2. Lean to the right, at the waist.
3. Push right arm to the left at waist level.
4. Push left arm to the right overhead. Keep upper arm close to ear.
5. Repeat for the left side.



Side Bend

1. Standing in straddle position, lean to the right, at the waist.
2. Move the right hand down the right leg to the calf level.
3. Left arm is overhead and curved over the head to the right.
3. Reverse for the left side.



Front Floor Sweep

1. Start in wide straddle position, with arms straight out at shoulder level.
2. Bending at hips, sweep palms across floor, cross arms, and return to upright position, as arms cross overhead.
3. Repeat action.



Side Sweep

1. Start in wide straddle position, with arms straight out at shoulder level.
2. Turn body to the right at the waist.
3. Bending at hips, sweep palms across floor beside the right foot, making a wide sweeping circle.
4. Return to upright, forward position, making a wide overhead sweep with arms.
5. Turn body at waist to the left side and repeat steps 3 and 4.

Variation: Do 4 side sweeps to each side before reversing.



Swing Back

1. Start in straddle position.
2. Cross left foot behind right leg and tap toe to floor.
3. Swing right arm up to the right.
4. Swing left arm behind body and to the right.
5. Repeat to the left.



Elbow Swing

1. Start in straddle position.
2. Bend elbow and interlock fingers at bust level.
3. Swing elbows out and up to the right side, then to the left side, opposite arm following.
4. Bend at waist with movement.



Side Rocks

1. Start in wide straddle position, with arms down to the sides.
2. Rock from side to side, snapping fingers and bending right knee as body rocks to the right, and snapping fingers and bending left knee as body rocks to the left. (Keep knees over toes.)



Front to Back Rock

1. Right foot forward, left foot back, and hands down at sides.
2. Lean forward, bending front knee, keeping back leg straight, and snap fingers.
3. Rock back, bending back knee slightly, keeping front leg straight, and snap fingers.
4. Repeat steps 2 and 3, 7 more times.
5. Reverse leg positions and repeat 8 more times.



Hip Rock

1. Start in straddle position with hands on hips.
2. Push hips to the right, then to the left in rocking motion.
3. Continue alternating sides.

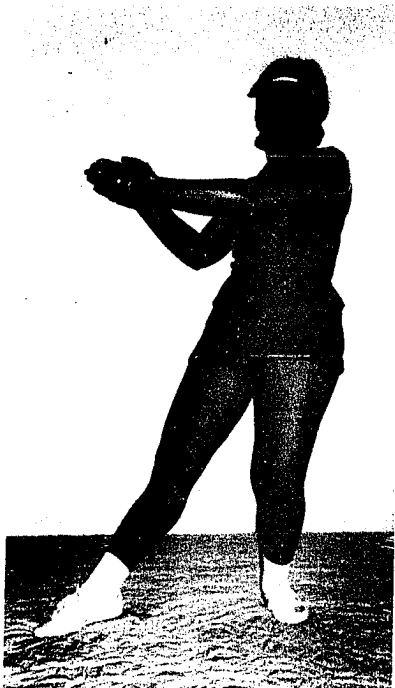


Sailor Hitch

1. Start in straddle position with thumbs hooked in front of shorts.
2. Bend right knee and lean back to the right, extending left leg forward.
3. Reverse lean to left, continue.

Neck Stretcher

1. Start in medium straddle position, with hands on hips.
2. Keeping body toward front, and shoulders from moving, turn head to the right as far as it will go, hold 4 counts, and turn head to the left, and hold 4 counts.
3. Continue.



Hustle Clap

1. Start in straddle position.
2. Touch right toe to front right.
3. Clap hands to the right.
4. Reverse for left.
Continue alternating sides.

Knee Bend Swing

1. Start in wide straddle, with arms at shoulder level, elbows bent and arms upward.
2. Swing both arms to the right, twisting at waist, keeping hips forward, and bend knees.
3. Bring both arms low as they swing across in front of body and knees go into a deep bend.
4. Swing to the left, and continue alternating sides.



Overhead Reach

1. Standing in straddle position, reach right arm overhead, with left elbow bent and hand at left shoulder.
2. Reverse for left. Continue alternating.

Circle-Up

1. Start in straddle position, with left hand on hip and right arm extended forward.
2. Extend right leg with foot pointed. Draw a wide circle with point of toe.
3. Follow toe action with hand of extended arm.
4. Return to stride position and reverse action to the left.



Heel Lifts

1. Stand in slight straddle position, with hands on hips.
2. Raise and lower both heels together, keeping toes on floor. (16 times)
3. Move feet together and repeat. (Keep shoulders back, and back straight throughout.)

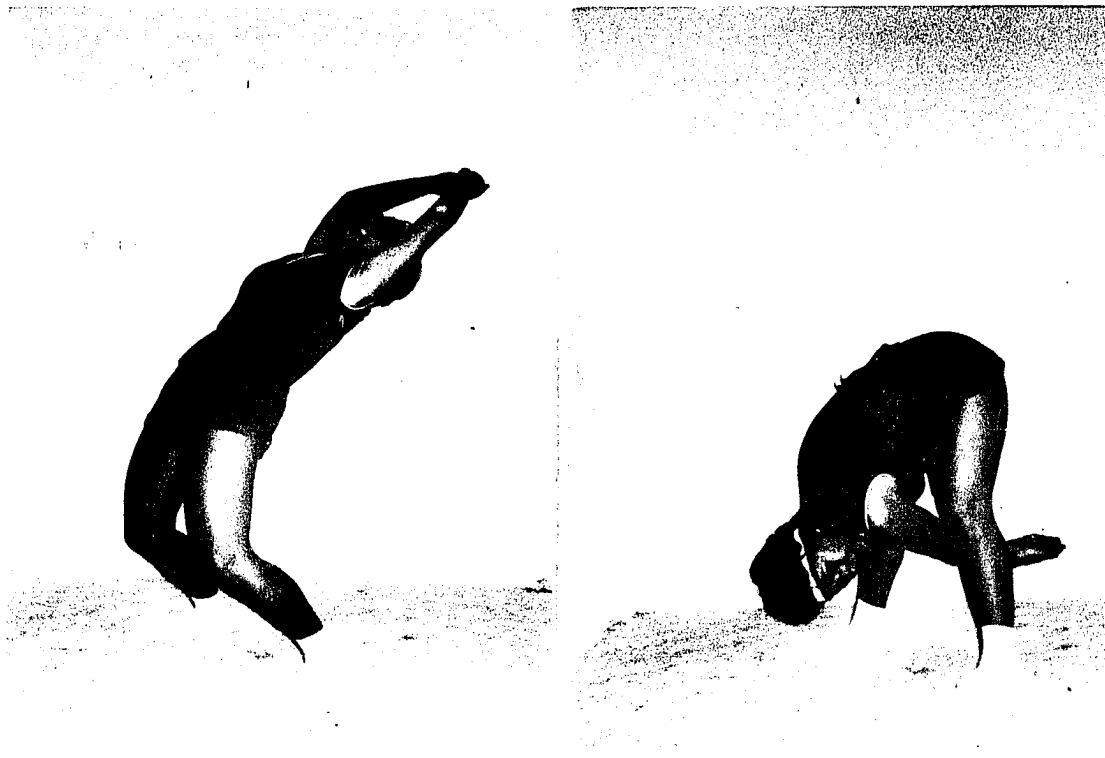


Fanny Kick

1. Stand in slight straddle position, with hands on hips.
2. Keep back straight, and shoulders back.
3. Keeping left foot flat on floor, bend right knee, pushing heel toward right buttock. (Hold 4 counts.)
4. Return to straddle position and repeat with left leg. (Hold 4 counts.)

Reach Through

1. Start in wide straddle position.
2. Reach overhead with clasped hands and lean backward, with knees bent.
3. Swing arms forward, lean forward at hips, and swing both hands between legs.
4. Push hands backward 4 times.
5. Return to upright position and repeat action.



Leg Hugs

1. Start with legs together.
2. Reach overhead and stretch upward.
3. Bending at hips, bring fact to knees, and grasp knees with arms. Hold 4 counts.
4. Return to upright position and reach overhead.
5. Repeat step 3, except grasp ankles with hands. Hold 4 counts.
6. Return to upright position and reach overhead.



Reach Front, Reach Back

1. Start in wide straddle position, with arms at shoulder level.
2. Bend right knee, keeping leg straight, touch left palm on floor in front of right foot.
3. Right arm is to the back and extended upward.
4. Repeat to the left. (2 times each side)
5. On the 5th count, reach left palm between legs and behind right heel.
6. Repeat to left. (2 times each side)



Cross Touch Twist

1. Start in slight straddle position.
2. Cross right foot over in front of body and touch right toe on the far left of the left foot.
3. Both arms swing out and up to the right side.
4. Reverse for the left side.

Knee Bend Twist

1. With feet together, and arms straight out to the side at shoulder level, bend knees, twist to the right, then to the left, keeping upper torso toward the front. (8 counts)
2. Move feet to straddle position and continue. (8 counts)



Touch Twist

1. Start in straddle position.
2. Touch right toe to the right side front.
3. With arms at shoulder level, twist upper torso to the right, swing both arms to the right.
4. Reverse for left twist.
5. Continue alternating.



Suzie-Q

1. Start with feet together and arms out at shoulder level.
2. Moving toward the right, bend the knees and point toes to the right.
3. Swinging hips around, point heels to the right.
4. Repeat steps 2 and 3, three more times.
5. Reverse action and move to the left 4 Suzie-Q's.



LUNGES

Lasso Lunge

1. Standing in straddle position, lunge to the right.
2. Place left hand at left hip.
3. Extend right hand overhead and make circular motions, as if twirling a lasso.
4. Bounce body with each "twirl."
5. Repeat to the left side.

Push Lunge

1. Standing in straddle position, lunge to the right.
2. Bring right hand back to right shoulder, with elbow bent.
3. Push left palm with wrist flexed, straight out at shoulder level.
4. Reverse for left side.



Shoulder Roll Lunge (1)

1. Start in straddle position, lunge to the right.
2. Bend elbows, bring forearms side by side, with hands fisted.
3. Roll shoulders as forearms rotate around each other.
4. Lower torso, 4 counts, raise torso 4 counts.
5. Reverse for the left side.



(1)



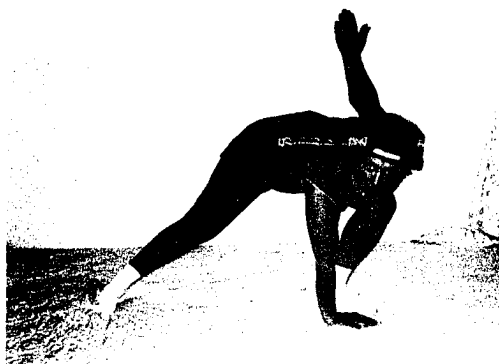
(2)

Top Clap Lunge (2)

1. Start in straddle position, lunge to the right.
2. Flex right foot keeping leg straight.
3. Bend left knee, keeping knee over toe.
4. Clap hands over right toe.
5. Return to upright position.
6. Repeat to the left.

Knee Lunge

1. Start in straddle position, lunge to the right.
2. Keeping back straight, push both hands down on each side of the knee.
3. Return to upright position and repeat to the left.



Floor Lunge

1. From starting position above, touch left hand to floor beside right foot.
2. Extend right arm up and to the back.
3. Return to upright position and repeat to the left.

Side Shoves

1. Start with feet together, turn upper torso to the right at the waist.
2. Both shove both arms, with wrists flexed, out to the right, at shoulder level.
3. Return to upright position, clap.
4. Repeat to the left side.



JOGGING LEVEL

Forward Sprint

1. Lean forward, keep legs straight, and do a stationary run.
2. Keeping arms straight, swing forward and backward with leg movement.

Backward Sprint

1. Keeping legs straight, lean backwards, and do a stationary run.
2. Keeping arms straight, swing forward and backward with leg movement.



Front Kicks

1. With hands on hips, kick right leg forward, while hopping on left foot.
2. Reverse for left kick.



Variation: Kick 4 times with each leg before reversing.

Cross Kick

1. With hands on hips, kick right leg across body to the left, while hopping on left foot.
2. Reverse for left kick.



Kick Over, Kick Back

1. Bend right leg at the knee, kick sideways in front of body, hopping on left foot.
2. Step right foot beside left foot and hop.
3. Kick left leg behind right knee.
4. Repeat set four times.
5. Reverse action.



Side Kicks

1. With arms straight down to sides, kick feet straight out to the sides with toes forward.
2. Reverse legs quickly.



Under Leg Claps

1. Kick right leg high to the front.
2. Clap hands under right leg, while hopping on left foot.
3. Repeat quickly to left.



Toe Touches

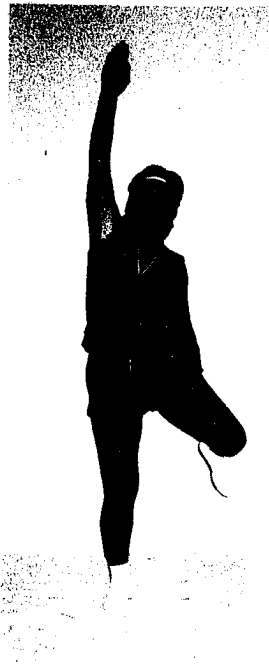
1. Bend right knee and kick foot in front of left thigh, while hopping on left foot.
2. Touch right foot with left hand.
3. Right arm is high overhead.
4. Reverse for left side.



Heel Touch

1. Kick right foot back, with knee bent, while hopping on left foot.
2. Touch right hand to right heel, keeping back straight.
3. Repeat to the left.

Variation: Do 4 heel touches to each side before reversing.



Alternate Heel Touch

1. Bend right knee and kick behind left leg, while hopping on left foot.
2. Touch left hand to right heel.
3. Right arm is high overhead.
4. Repeat for left side.



Movin' On

1. In straddle position, bend elbows, and flex wrists (palms facing forward).
2. Make circular motion with both palms (moving them together as one).
3. With each circular motion, take a wide side step with bended knees.

Kneelifts

1. Start in straddle position.
2. Lift right knee, hopping on left foot.
3. Twist body at waist, and touch left elbow to right knee.
4. Reverse for left kneelift.



Straddle, Cross, Straddle

1. Start in straddle position, with hands on hips.
2. Hop and cross legs, hop to straddle again. Continue.



Groucho (1)

1. Bend knees and walk low.
2. As right knee goes forward, right arm bends at elbow and swings back, with hand at waist level.
3. Repeat to left.



(1)



(2)

Kneebend Snap (2)

1. Start in slightly straddle position.
2. Bend knees and snap fingers to sides.
3. Return to upright position and repeat action.

Variation: As knees bend, push hips forward.

Front to Back

1. Start with right leg forward, and left leg back, hands on hips.
2. With knees locked, hop forward on right leg, and hop backward on left leg. Continue.
3. Reverse leg position and continue.



FLOOR EXERCISES

Wings

1. Sit tailor fashion.
2. Bend elbows and bring hands up to bust level.
3. Push elbows to the back as far as they will go, palms down.
4. Repeat with palms up. (This is one set.)

Butterfly

1. In sitting position, with back straight, place soles of feet together and hold with hands.
2. Flutter legs to floor and up.



Back Stretcher

1. Sit tailor fashion, with hands on hips.
2. Stretch upward, elevating chest.
3. Lean forward at hips and attempt to put head on floor in front of legs.
4. Round back, curl arms inward and return to upright position.
5. Repeat.



Calf Stretch



1. From butterfly position, grasp foot (or ankle).
2. Extend leg straight up holding foot (or ankle).
3. Reverse legs. (This is one set.)

Knee Bender



1. From butterfly position, extend left leg straight out, and grasp right foot.
2. Pull right foot across front of body and press sole of foot into left hip (hold 8 counts).

Spider Legs

1. In sitting position, with knees bent, grasp ankles.
2. Straighten right leg, holding ankle.
3. Follow leg down to the floor with torso.
4. Repeat with left leg. (This is one set.)



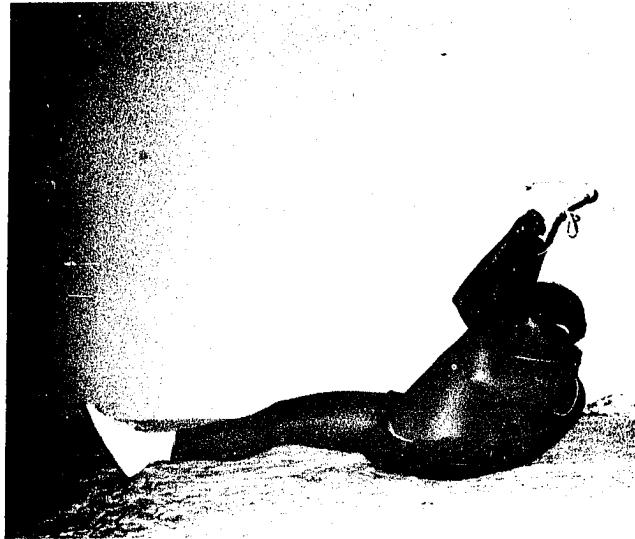
Sitting Side Bender

1. Seated in stride position.
2. Reach both arms high overhead, lean sideward and reach for ankle with both hands.
3. Follow arms with torso.



Alley Oop

1. Sitting with legs straight out to the front.
2. Lean upper torso down over right leg.
3. Grasp leg at back of knee and calf, with both hands.
4. Return torso to sitting position, continuing on to a lean back position, following with the leg.
5. Return leg to the floor.
6. Repeat with left leg.





Sitting Leg Swing

1. Sit in straddle position with hands on hips and back straight.
2. Raised flexed right foot about 2 inches from floor.
3. Swing raised leg from the hip, toward the left leg; return to the right side, 8 times before allowing foot to touch floor.
4. Repeat 8 times with the left leg.

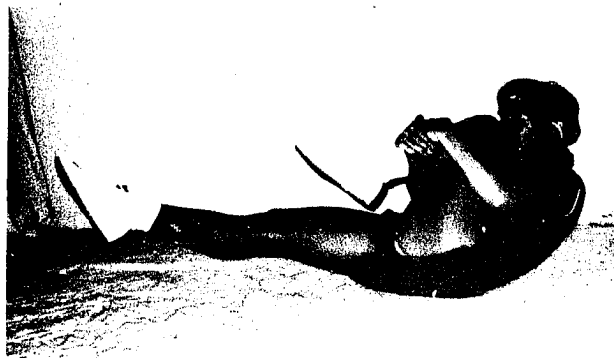


Straddle Reach

1. Sit in straddle position with arms straight up overhead.
2. Lean torso forward at hips and place palms down on floor.

Bicycle

1. Lying on floor, bring right knee to nose, as upper torso raises to meet knee.
2. Grasp knee with both hands and hug to chest, keeping elbows out to the side.
3. Bounce straight leg twice, not letting it touch the floor.
4. Reverse legs. Two counts to each leg.



Leg Lifts

1. Lying on side, support upper torso on bent elbow.
2. Raise right leg up toward shoulder, lower leg (8 counts).
3. Repeat to the left.

Variation: Grasp raised leg with hand, pull toward shoulder and hold for 8 counts.

Thigh Lifts

1. From position above, keeping toe flexed, and knee forward, lift leg from hip, straight up, and lower, 8 times.
2. Reverse action for the left leg.



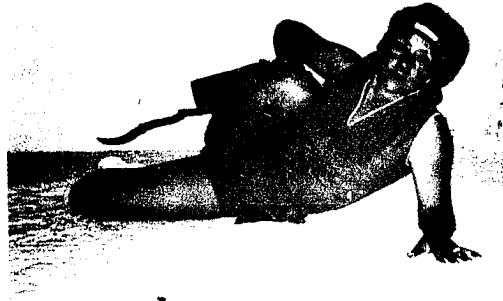
Foot Flex

1. Lie on back with knees bent and supported on elbows.
2. Raise right leg straight upward.
3. Flex and extend raised foot.
4. Make circles with pointed toe, first to the right 8 times, then to the left 8 times.
4. Reverse action for the left leg.



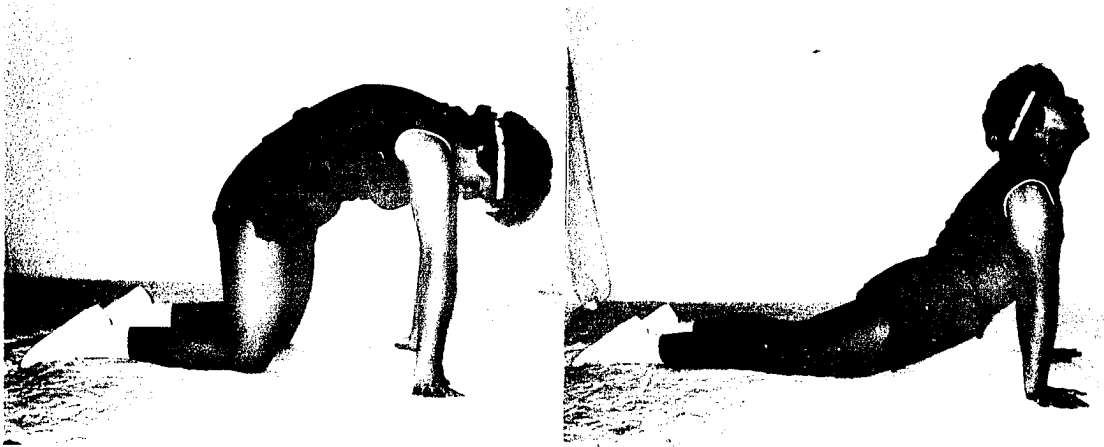
Bend and Stretch

1. Lying on side, support upper torso on bent elbow.
2. Bend left leg back behind body.
3. Bring right knee up to chin, and tap with right hand.
4. Push right leg straight down and to the back, as right arm swings upward. Repeat 7 more times.
5. Reverse action for the left side.



Cat Stretch (1)

1. Start on hands and knees.
2. Arch back upwards, tucking stomach tightly. Hold 4 counts.
3. Relax, and repeat step 2.



(1)

(2)

Cobra (2)

1. From position above, push forward on hands, raising shoulders with arms locked.
2. Arch back and lean head backward, with teeth together. Hold 4 counts.
3. Return hands and knees to position.

Swan Stretch

1. Start on hands and knees.
2. Stretch left leg straight back.
3. Right leg is bent at knee and under body.
4. Clasp hands overhead, arch back and lean back. Hold stretch for 8 counts.
5. Reverse leg positions.



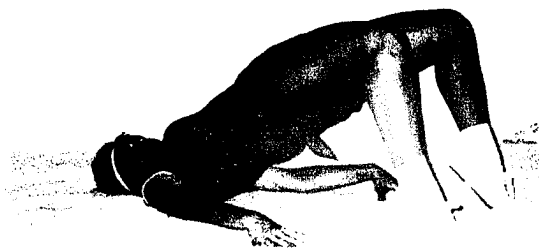
Floor Stretch

1. Start on hands and knees.
2. Stretch both hands, palms down, as far forward on floor as possible.
3. Sit back on heels, hold stretch for 8 counts.



Bun Burner

1. Start lying on back with knees bent, feet flat on floor.
2. Keeping shoulders flat on floor, raise hips toward ceiling, hold stretch 8 counts.
3. For variation, raise the lower hips 8 counts.



Frog

1. Start in squatting position.
2. With hands, palms down, on floor between feet, raise and lower heels 16 times.



See-Saw

1. Start in squatting position.
2. Place hands on floor, palms down, fingers pointing toward each other, elbows bent outward.
3. Extend right leg to the right side, toes flexed, calf on floor, and hold for 8 counts.
4. Repeat to the left.

Rhythmic Sit-Ups

1. Sit with legs spread in a medium "v", knees bent, and round back.
2. Snap fingers to the side for 8 counts, while the torso is slowly lowered to the floor.
3. Snap fingers 8 counts as torso is returned to upright position.
4. For variation, hold at mid-point for 8 counts.

Kneeling Heel Touches

1. On knees in straddle position, lean backward with right hand, touch right heel.
2. Left arm is to the left and far overhead. Hold 4 counts.
3. Repeat to the left.
4. For variation, touch R, L, R, L, etc., for 8 counts.



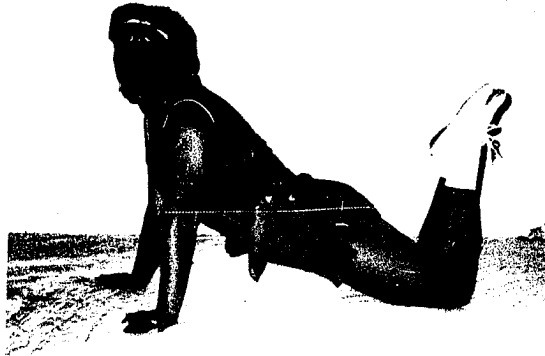
Alternating Heel Touches

1. Same as Kneeling Heel Touch, except, lean backward and touch right hand to left heel, behind the back.
2. The left arm is high overhead.
3. Hold stretch for 4 counts.
4. Repeat to the left side.
5. For variation, touch R, L, R, L, etc., for 8 counts.



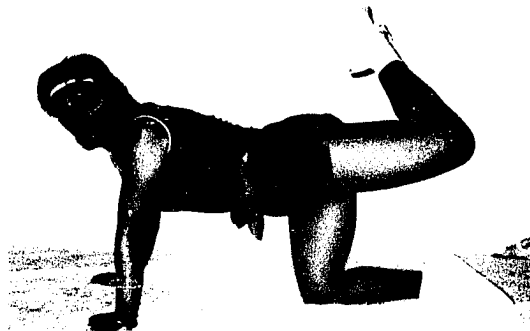
Push-Ups

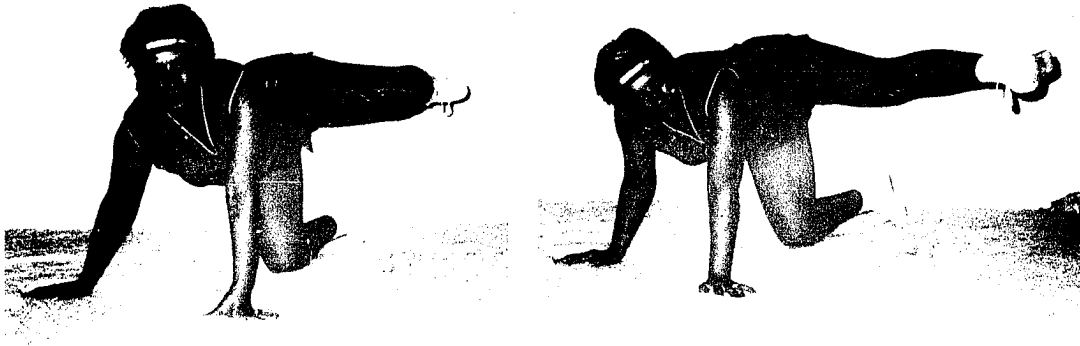
1. Start on floor, on stomach, with knees bent, and hands on floor, palms down, and elbows bent.
2. Push torso up, keeping back straight, lower torso, touching chest to floor.
3. Repeat.



Donkey Kick

1. On hands and knees, raise right leg straight back, and bend knee.
2. Kick right heel toward back 8 times. (Be sure to keep back straight.)
3. Repeat with the left leg 8 times.





Fire Hydrant (1)

1. On hands and knees, lift right leg, bent at the knee, straight to the side (hip level), 8 times.
2. Repeat for the left side.

Kneeling Swing (2)

1. On hands and knees, lift right leg (knee locked) straight to the side.
2. Swing leg (at hip level) back and forth (toward shoulder and straight back). 16 swings forward.
3. Reverse for left side.

APPENDIX J
Choreographed Routines

MUSIC: "Bad, Bad, Leroy Brown"
 ARTIST: Jim Croce

SEQUENCE 1:

Swing Backs - 16

MUSIC CUES

(Instrumental)

SEQUENCE 2:

- | | |
|---|-------------------------------|
| A. Push Lunges - 16
(R, L, R, L, etc.) | (Well, The South . . .) |
| B. Side Kicks - 16 | (Now Leroy . . .) |
| C. Heel Touches - 8 | (All through down . . .) |
| D. Suzie Q - 4 sets
(R, L, R, L, etc.) | (Bad, bad, Leroy Brown . . .) |

SEQUENCE 3:

Repeat A-D of Sequence 2, (Now, Leroy, He . . .)
 3 more times.

SEQUENCE 4:

- | | |
|---------------------|----------------------------|
| A. Side Kicks - 24 | (The two mans . . .) |
| B. Suzie Q - 8 sets | (Bad, bad Leroy Brown) |
| C. Push Lunges - 8 | (Badder than a junk . . .) |

DESCRIPTION OF MOVEMENTS
(See Illustrations)

SWING BACK: Cross left foot behind right foot, and tap toe to floor. Swing both arms behind back to right. This is one swing back. Repeat to left.

PUSH LUNGE: Lunge to the right. Push left arm with palm flexed, straight forward. Bring right hand back to shoulder. This is one push lunge. Repeat to the left.

SIDE KICK: With arms straight down to the sides, alternate kicking feet straight out to the sides, with toes pointed forward.

HEEL TOUCHES: Bend knee and kick right foot behind the body. Reach down with right hand and tap heel. This is one heel touch. Repeat to the left.

SUZIE Q: Keeping legs together and twisting at the waist, point toes toward the right side, then point both heels toward the right side; repeat once more. Kick left leg to the right. This is one set. Repeat to the left, reversing action.

MUSIC: "Raindrops Keep Falling On My Head"
 ARTIST: Dionne Warwick

SEQUENCE 1:	<u>MUSIC CUES</u>
Finger Snaps - 8	(Instrumental)
SEQUENCE 2:	
A. Side Arm Pushes - 8 (R, L, R, L, etc.)	(Raindrops keep falling)
B. Arm Stretch - 1	
SEQUENCE 3:	
A. Straight Arm Twist - 8 (R, L, R, L, etc.)	(Nothing seems to fit)
B. Overhead clasps - 8 (R, L, R, L, etc.)	(So, I just)
C. Elbow Swings - 8 (R, L, R, L, etc.)	(He got things)
SEQUENCE 4:	
A. Side Rocks - 8 (R, L, R, L, etc.)	(They keep falling)
B. Forward Rocks (right foot forward)	(the blues)
C. Forward Rocks - 8 (left foot forward)	(happiness)
SEQUENCE 5:	
Repeat sequences 2 and 3	(Raindrops keep falling)
SEQUENCE 6:	
Side Rocks - 10 (R, L, R, L, etc.)	(won't be long)
SEQUENCE 7:	
Repeat sequences 2 and 3, except delete C of sequence 3	(Raindrops keep falling)
SEQUENCE 8:	
Floor Sweep - 1	(Me-e-e)

DESCRIPTION OF MOVEMENTS

FINGER SNAPS: Snap fingers of both hands, and slightly bend and straighten knees to music.

SIDE ARM PUSHES: Standing in a stride position, hold arms out to the side at shoulder level, hands flexed. Push right palm toward right wall, leaning upper torso to right also. This is one side arm push. Repeat left.

ARM STRETCH: In position above, push both palms toward opposite walls at the same time.

STRAIGHT ARM TWIST: In position above, lunge to the right and twist body from the waist to right side, turning face to back wall. This is one Straight Arm Twist; repeat to left.

OVERHEAD CLASP: Standing in stride position, clasp hands overhead. Lean sideways to the right; repeat to the left side. This is two overhead clasps.

ELBOW SWINGS: Begin in stride position. Bend elbows in front of body and hook fingers of right and left hands together at bust level. Swing right elbow to side to ear level. This is one count. Repeat to left. (See illustrations of movements.)

MUSIC: "Elvira"
 ARTIST: Dallas Frasier

SEQUENCE 1:	<u>MUSIC CUES</u>
Lasso Lunges - 4 sets (4R-4L-4R-4L)	(Elvira)
SEQUENCE 2:	
A. Heel-Tap Swings - 4 Forward	(My heart's on Fire)
B. Toe Claps - 4 Back (Repeat A and B to right wall, to back wall, to left wall, and forward [5 sets])	
SEQUENCE 3:	
Two-Step-Touch and Go - 8 sets (R, L, R, L, etc.)	(Elvira)
SEQUENCE 4:	
Shoulder Roll Lunges - 4 sets (R, L, R, L, etc.)	(Gitty-up)
SEQUENCE 5:	
Repeat sequence 2 (except omit last forward set [4 sets])	(Tonight)
SEQUENCE 6:	
Repeat sequence 3	(Elvira)
SEQUENCE 7:	
Repeat sequence 4	(Gitty-up)
SEQUENCE 8:	
Two-Step-Touch and Go - 2 sets	(Elvira)

DESCRIPTION OF MOVEMENTS
(See Illustrations)

LASSO LUNGES: Lunge to the right, holding left hand on left hip. The right arm is circling overhead, lasso style. The front knee is forward and bent. The left leg is straight back. Bounce lively 4 times on back toes. This is one set. Repeat to left.

HEEL-TAP SWING: Swing right leg to right and tap heel on floor. At the same time swing both arms down across the front of the body and up the right side. This is one heel-toe swing. Repeat to left side.

TOE CLAPS: Swing right leg straight out to right side and tap heel as toe points up. Left leg is bent at the knee. Turn body to right side and clap both hands over the tip of right toes. This is one toe clap. Repeat on left side.

TWO-STEP-TOUCH AND GO: Step right with right foot; slide left foot beside it. Repeat one more time (this is a two-step). Swing both arms up to the right overhead, and touch left foot behind and beyond right foot. This is one two-step-touch and go. Repeat to the left.

SHOULDER ROLL LUNGE: Lunge to the right; bend right knee deeply, and bring forearms parallel over knee. Roll shoulders as forearms rotate around each other, 4 counts down; 4 counts up. This is one shoulder roll lunge set. Repeat to the left.

MUSIC: "St. Louis Blues"
ARTIST: Firehouse Five Plus Two

This is a follow-the-leader fun routine. The group weaves about the room in a line, as the leader changes movements. The leader can then go to the back of the line and let the next person in line be a leader. Suggested movements for this recording are:

Side Kicks
Under Leg Claps
Heel Touches
Sprints
Throwing Punches
Knee Lifts
Elbow to Knee
Toe Touches (Bent Knee)
Heel, Toe
Cross, Stride, Cross
Front to Back
Front Kick
Cross Kick
Kick Over, Kick Back

See illustrations for movement description.

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