

Winter 1982

# Human Performance Lab Newsletter, Vol. 2, No. 1

St. Cloud State University

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# Human Performance Laboratory Center for Lifestyle Enhancement

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Volume II, Number 1

Winter, 1982

## Newsletter

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### Feeling Good

Most of you, at one time or another, have shared your thoughts with us about how good you have been feeling as a result of your increased levels of activity and fitness. These personal documentaries are nearly impossible to measure with physiological monitoring devices. Yet, to the surprise of many, the good feelings we experience as a result of physical activity are quite likely to be of greater value to our well being than the physiological improvements we achieve. In our opinion, these feelings run deep and may, in fact, reach the very essence of our being. Many of us believe that this is one way the body communicates with mind and spirit. For this body mind, spirit communication to be most effective, we believe that it is important for the physical experience to be joyful and refreshing. So, we are encouraging all of our members to evaluate their personal fitness programs to determine if they are providing opportunities for feeling good.

### Fund Raising

We are in the process of finding alternative ways to fund the activities of the Human Performance Laboratory. As you know, the State Is economy, has had a great financial effect on higher education. Our University is not in a good position to meet all of our needs. We believe that our services have made significant contributions to our community and that they should be continued. Revenues from our Adult Fitness Program are being used for our part-time secretarial services, student assistants and laboratory equipment and supplies. Additional funding is needed for medical and nutritional services and additional secretarial assistance.

Bob Jennings, who has volunteered to chair our fund-raising efforts, is in the process of appealing to you for help. We are aware that these are financially difficult times for many and that it may be difficult or impossible for you to participate at this time. However, we would like you to know of our needs and that any support you could provide will be greatly appreciated and used carefully. We should also like you to know that our program is a non-profit, tax-exempt organization and that any contribution you make may be used as a tax deduction.

### T-Shirts

You may have noticed the neat blue and white T-shirts that many of our members are sporting these days. If you would like one, they may be purchased at a cost of \$5 each.

Physician Involvement

We are pleased to announce that seven cardiologists are participating in our program by supervising many of our exercise tests. The doctors rotate so that one will be present every Tuesday afternoon between 3:00 and 5:00 p.m. Only those individuals whom we consider to be at higher risk than average are scheduled at this time. Everyone else will continue to be tested in the same manner as we have done previously. Those factors that increase cardiovascular risk are: cholesterol levels, hypertension, smoking, obesity, age and lack of exercise. Most of the new people who enter our program will also be scheduled with medical supervision. A paramedic has also been employed to assist during this time. We believe that this arrangement is a significant improvement in the Laboratory's function. The following physicians are involved with this work: Thomas Luby, Leland Lindquist, Frederic Engman, Ronald Elg, Perry Severance, Brad Currier, and James Kelly.

Weight Loss is Possible by Michael Hewitt, Graduate Assistant)

Many of the people involved with our fitness program have goals of controlling their body composition as well as improving cardiovascular fitness. Most want to lose some weight and many are interested in spot reducing... "How can I get rid of this roll?" or "What exercise can I do to lose weight on my thighs?"

Unfortunately, all of the reducing plans that claim to flatten this, or take weight off that, simply do not work. Although specific exercises may tone the underlying muscles, the only way to remove fat from those trouble areas is to reduce overall percentage of body fat.

In principle, weight loss is very simple. Weight is lost whenever the numbers of calories burned exceed the calories consumed. Of course, if caloric consumption is greater than the calories used, the surplus is stored as fat. Your genetic makeup and sex determine where this surplus is deposited.

Body fat can be reduced in three ways: reduced caloric intake (diet), increased caloric output (exercise), or a combination of both. Walt Clement, who has been involved with the morning fitness program since October, is a great example of how successful an exercise program can be. When Walt began, he weighed 202 pounds. On Monday, Wednesday and Friday mornings he came to Halenbeck to walk two miles, burning 220 calories three times a week, for a weekly total of 660. With no change in diet, this would mean a fat weight loss of 3/4 pound per month. (Remember, one pound of fat equals 3500 calories.) In the three month period, Walt has increased his exercise to five times a week and his walking distance to four miles per day. This exercise has increased Walt's caloric output by 2,400 calories per week. With no change in eating habits, this would account for a loss of 2 1/3 pounds of fat per month. This exercise and some changes in diet have helped Walt to lose 14 pounds, down to 188, and he's still going strong!

The best thing is that Walt's case is not unique. Although 12 pounds weight loss in three months is exceptional, a regular exercise program can account for a recommended rate of 1 pound fat lose per month for almost anyone who wants to lose that little surplus. Stop in to see us in the mornings--we'll be glad to give you that extra encouragement!

Heart Rate Monitoring--how why etc. (by Randy Braith, Student Assistant)

Most of us perform warm-up exercises before our workouts because we know that sudden exertion can damage muscles and tendons. However, an even more important function of our warm-up is to allow the heart time to adjust to the increased demands about to be placed on it. Therefore, several minutes (5 -7) of walking and/or easy jogging should pass before accelerating our heart rates into the training zone.

Heart rate can be determined at a number of points throughout the body but the usual method is to palpate either the radial pulse point in the wrist or the carotid artery in the neck. The radial pulse may be faint in some people; therefore, readings at that site may not be dependable. The carotid artery, however, is especially dependable because it is large, lies near the skin surface and is close to the heart. Locate a carotid pulse by placing the tips of your index and middle fingers on the "Adams' apple" and then slide them off the midline to the side of the neck. Remember, easy pressure does it; you do not wish to interfere with blood flow to your brain!

It is important that the heart rate be taken immediately after stopping exercise because the heart decelerates within 10 seconds. As a reminder, the simplest method is to count the pulse for 6 seconds (skip first and last beats) and then add a zero, which converts to beats per minute.

What, you might ask, is the importance of monitoring my heart rate? Isn't all activity beneficial to my health? Certainly any activity is preferable to inactivity, but for each of us, athlete or non-athlete, there is a minimum level of exercise intensity above which significant gains in fitness occur. Collectively, these fitness gains are referred to as a "training effect." An adequate training effect can be best achieved by maintaining your prescribed heart rate zone for a period of 20-30 minutes per exercise session. It is also important to remember that it is unnecessary to exceed your target zone for optimum results. The upper heart rate of your zone is designed to prevent overexertion and to assist you in ensuring that your training program is safe as well as beneficial.

If your favorite activity is of a discontinuous nature, such as tennis or racquetball, the energy demands are not consistent so your heart rate probably fluctuates both above and below the prescribed zone. Therefore, this type of activity should be of such duration that your heart rate, over time, averages out to the prescribed level.

From the Secretary's Desk

We have greatly appreciated your efforts to be on time for appointments and to notify the Lab in advance if you cannot be here at your scheduled time. It is especially important that we have several days notice, (if at all possible) when your appointment is on a Tuesday, so that we can quickly reschedule someone to take your place, allowing us to use the physician's time to our best advantage. Since I am not always able to contact you, I would like to encourage you to call for an appointment if you feel we have missed your regular testing period. I am here 8:30 a. m. - 12:30 p.m. Monday through Friday, phone 255-3105 or 255-3637.

More on Calories

In the last newsletter, a table illustrating the number of calories burned per mile of walking or running was included. If you misplaced it and would like a copy, you may obtain another by visiting the Laboratory at your convenience. We promised to provide a list of other aerobic activities and their caloric values in the present letter. The following information will assist you in determining your energy expenditures in many of your other activities:

Calorie Expenditure per Minute for Various Activities

|                            | Body Weight |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|----------------------------|-------------|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|                            | 90          | 99  | 108 | 117 | 125 | 134  | 143  | 152  | 161  | 170  | 178  | 187  | 196  | 205  | 213  | 222  | 231  | 240  | 249  | 257  | 266  | 275  |
| Badminton (recreation)     | 3.4         | 3.8 | 4.1 | 4.4 | 4.8 | 5.1  | 5.4  | 5.6  | 6.1  | 6.4  | 6.8  | 7.1  | 7.4  | 7.8  | 8.1  | 8.3  | 8.8  | 9.1  | 9.4  | 9.8  | 10.1 | 10.4 |
| Badminton (competition)    | 5.9         | 6.4 | 7.0 | 7.6 | 8.1 | 8.7  | 9.3  | 9.9  | 10.4 | 11.0 | 11.6 | 12.1 | 12.7 | 13.3 | 13.9 | 14.4 | 15.0 | 15.6 | 16.1 | 16.7 | 17.3 | 17.9 |
| Basketball (half-court)    | 2.5         | 3.3 | 3.5 | 3.8 | 4.1 | 4.4  | 4.7  | 4.9  | 5.3  | 5.6  | 5.9  | 6.2  | 6.4  | 6.7  | 7.0  | 7.3  | 7.5  | 7.6  | 8.2  | 8.5  | 8.8  | 9.0  |
| Basketball (moderate)      | 4.2         | 4.6 | 5.0 | 5.5 | 5.9 | 6.3  | 6.7  | 7.1  | 7.5  | 7.9  | 8.3  | 8.8  | 9.2  | 9.6  | 10.0 | 10.4 | 10.8 | 11.2 | 11.6 | 12.0 | 12.5 | 12.9 |
| Basketball (competition)   | 5.9         | 6.5 | 7.1 | 7.7 | 8.2 | 8.8  | 9.4  | 10.0 | 10.6 | 11.1 | 11.7 | 12.3 | 12.9 | 13.5 | 14.0 | 14.6 | 15.0 | 15.2 | 16.3 | 16.9 | 17.5 | 18.1 |
| Bicycling (level, 5.5 mph) | 3.0         | 3.3 | 3.6 | 3.9 | 4.2 | 4.5  | 4.8  | 5.1  | 5.4  | 5.6  | 5.9  | 6.2  | 6.5  | 6.8  | 7.1  | 7.4  | 7.7  | 8.0  | 8.3  | 8.6  | 8.9  | 9.2  |
| Bicycling (level, 13 mph)  | 6.4         | 7.1 | 7.7 | 8.3 | 8.9 | 9.6  | 10.2 | 10.8 | 11.4 | 12.1 | 12.7 | 13.4 | 14.0 | 14.6 | 15.2 | 15.9 | 16.5 | 17.1 | 17.8 | 18.4 | 19.0 | 19.6 |
| Dance, modern (moderate)   | 2.5         | 2.8 | 3.0 | 3.2 | 3.5 | 3.7  | 4.0  | 4.2  | 4.5  | 4.7  | 5.0  | 5.2  | 5.4  | 5.7  | 5.9  | 6.2  | 6.4  | 6.7  | 6.9  | 7.2  | 7.4  | 7.6  |
| Dance aerobic (moderate)   | 3.4         | 3.7 | 4.1 | 4.4 | 4.7 | 5.1  | 5.4  | 5.7  | 6.1  | 6.4  | 6.7  | 7.1  | 7.4  | 7.7  | 8.1  | 8.4  | 8.7  | 9.1  | 9.4  | 9.7  | 10.1 | 10.4 |
| Dance, fox-trot            | 2.7         | 2.9 | 3.2 | 3.4 | 3.7 | 4.0  | 4.2  | 4.5  | 4.7  | 5.0  | 5.3  | 5.5  | 5.8  | 6.0  | 6.3  | 6.6  | 6.8  | 7.1  | 7.3  | 7.6  | 7.9  | 8.1  |
| Dance, aerobic (vigorous)  | 4.2         | 4.6 | 5.0 | 5.4 | 5.8 | 6.2  | 6.6  | 7.0  | 7.4  | 7.8  | 8.2  | 8.6  | 9.0  | 9.4  | 9.8  | 10.2 | 10.6 | 11.0 | 11.5 | 11.9 | 12.3 | 12.6 |
| Dance, square              | 4.1         | 4.5 | 4.9 | 5.3 | 5.7 | 6.1  | 6.5  | 6.9  | 7.3  | 7.8  | 8.1  | 8.5  | 8.9  | 9.3  | 9.7  | 10.1 | 10.5 | 10.9 | 11.3 | 11.7 | 12.1 | 12.4 |
| Golf, 2-some               | 3.3         | 3.6 | 3.9 | 4.2 | 4.5 | 4.8  | 5.2  | 5.5  | 5.8  | 6.1  | 6.4  | 6.7  | 7.1  | 7.4  | 7.7  | 8.0  | 8.3  | 8.6  | 9.0  | 9.3  | 9.6  | 10.0 |
| Golf, 4-some               | 2.4         | 2.7 | 2.9 | 3.2 | 3.4 | 3.6  | 3.9  | 4.1  | 4.3  | 4.6  | 4.8  | 5.1  | 5.3  | 5.5  | 5.8  | 6.0  | 6.2  | 6.5  | 6.7  | 7.0  | 7.2  | 7.4  |
| Handball/racquetball       | 5.9         | 6.4 | 7.0 | 7.6 | 8.1 | 8.7  | 9.3  | 9.9  | 10.4 | 11.0 | 11.6 | 12.1 | 12.7 | 13.3 | 13.9 | 14.4 | 15.0 | 15.6 | 16.1 | 16.7 | 17.3 | 17.9 |
| Skating (moderate)         | 3.4         | 3.8 | 4.1 | 4.4 | 4.8 | 5.1  | 5.4  | 5.8  | 6.1  | 6.4  | 6.8  | 7.1  | 7.4  | 7.8  | 8.1  | 8.3  | 8.8  | 9.1  | 9.4  | 9.8  | 10.1 | 10.4 |
| Skating (vigorous)         | 6.2         | 6.8 | 7.4 | 8.0 | 8.6 | 9.2  | 9.8  | 9.9  | 11.0 | 11.6 | 12.2 | 12.8 | 13.4 | 14.0 | 14.6 | 15.2 | 15.8 | 16.4 | 17.0 | 17.6 | 18.2 | 18.8 |
| Skiing, downhill           | 5.8         | 6.4 | 6.9 | 7.5 | 8.1 | 8.6  | 9.2  | 9.8  | 10.3 | 10.9 | 11.4 | 12.0 | 12.6 | 13.1 | 13.7 | 14.3 | 14.8 | 15.4 | 16.0 | 16.5 | 17.1 | 17.7 |
| Skiing, cross-country      | 7.0         | 7.7 | 8.4 | 9.1 | 9.8 | 10.5 | 11.1 | 11.8 | 12.5 | 13.2 | 13.9 | 14.6 | 15.2 | 15.9 | 16.6 | 17.3 | 18.0 | 18.7 | 19.4 | 20.0 | 20.7 | 21.4 |

Calorie Expenditure per Minute for Various Activities (continued)

|                                 | Body Weight |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|---------------------------------|-------------|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|                                 | 90          | 99  | 108 | 117 | 125 | 134  | 143  | 152  | 161  | 170  | 178  | 187  | 196  | 205  | 213  | 222  | 231  | 240  | 249  | 257  | 266  | 275  |
| Swimming, pleasure (25 yd/min)  | 3.4         | 3.8 | 4.1 | 4.4 | 4.8 | 5.1  | 5.4  | 5.6  | 6.1  | 6.4  | 6.8  | 7.1  | 7.4  | 7.8  | 8.1  | 8.3  | 8.8  | 9.1  | 9.4  | 9.8  | 10.1 | 10.4 |
| Swimming, back (20 yd/min)      | 2.4         | 2.7 | 2.9 | 3.2 | 3.4 | 3.6  | 3.9  | 4.1  | 4.3  | 4.6  | 4.8  | 5.1  | 5.3  | 5.5  | 5.8  | 6.0  | 6.2  | 6.5  | 6.7  | 7.0  | 7.2  | 7.4  |
| Swimming, back (30 yd/min)      | 3.3         | 3.6 | 3.9 | 4.2 | 4.5 | 4.8  | 5.2  | 5.5  | 5.8  | 6.1  | 6.4  | 6.7  | 7.1  | 7.4  | 7.7  | 8.0  | 8.3  | 8.6  | 9.0  | 9.3  | 9.6  | 10.0 |
| Swimming, back (40 yd/min)      | 5.0         | 5.5 | 5.8 | 6.5 | 7.0 | 7.5  | 7.9  | 8.5  | 8.9  | 9.4  | 9.9  | 10.4 | 10.9 | 11.4 | 11.9 | 12.3 | 12.8 | 13.3 | 13.8 | 14.3 | 14.8 | 15.3 |
| Swimming, breast (20 yd/min)    | 2.9         | 3.2 | 3.4 | 3.8 | 4.0 | 4.3  | 4.6  | 4.9  | 5.1  | 5.4  | 5.7  | 6.0  | 6.3  | 6.5  | 6.8  | 7.1  | 7.4  | 7.7  | 7.9  | 8.2  | 8.5  | 8.8  |
| Swimming, breast (30 yd/min)    | 4.2         | 4.6 | 5.0 | 5.5 | 5.9 | 6.3  | 6.7  | 7.1  | 7.5  | 7.9  | 8.3  | 8.8  | 9.2  | 9.6  | 10.0 | 10.4 | 10.8 | 11.2 | 11.6 | 12.0 | 12.5 | 12.9 |
| Swimming, breast (40 yd/min)    | 5.8         | 6.3 | 6.9 | 7.5 | 8.0 | 8.6  | 9.2  | 9.7  | 10.3 | 10.8 | 11.4 | 12.0 | 12.5 | 13.1 | 13.7 | 14.2 | 14.8 | 15.4 | 15.9 | 16.5 | 17.0 | 17.6 |
| Swimming, butterfly (50 yd/min) | 7.0         | 7.7 | 8.4 | 9.1 | 9.8 | 10.5 | 11.1 | 11.8 | 12.5 | 13.2 | 13.9 | 14.6 | 15.2 | 15.9 | 16.6 | 17.3 | 18.0 | 18.7 | 19.4 | 20.0 | 20.7 | 21.4 |
| Swimming, crawl (20 yd/min)     | 2.9         | 3.2 | 3.4 | 3.8 | 4.0 | 4.3  | 4.6  | 4.9  | 5.1  | 5.4  | 5.7  | 5.8  | 6.3  | 6.5  | 6.8  | 7.1  | 7.3  | 7.7  | 7.9  | 8.2  | 8.5  | 8.8  |
| Swimming, crawl (45 yd/min)     | 5.2         | 5.8 | 6.3 | 6.8 | 7.3 | 7.8  | 8.3  | 8.8  | 9.3  | 9.8  | 10.4 | 10.9 | 11.4 | 11.9 | 12.4 | 12.9 | 13.4 | 13.9 | 14.4 | 15.0 | 15.5 | 16.0 |
| Swimming, crawl (50 yd/min)     | 6.4         | 7.1 | 7.7 | 8.3 | 8.9 | 9.6  | 10.2 | 10.8 | 11.4 | 12.1 | 12.7 | 13.4 | 14.0 | 14.6 | 15.2 | 15.9 | 16.5 | 17.1 | 17.8 | 18.4 | 19.0 | 19.6 |
| Tennis (recreation)             | 4.2         | 4.6 | 5.0 | 5.4 | 5.8 | 6.2  | 6.6  | 7.0  | 7.4  | 7.8  | 8.2  | 8.6  | 9.0  | 9.4  | 9.8  | 10.2 | 10.6 | 11.0 | 11.5 | 11.9 | 12.3 | 12.6 |
| Tennis (competition)            | 5.9         | 6.4 | 7.0 | 7.6 | 8.1 | 8.7  | 9.3  | 9.9  | 10.4 | 11.0 | 11.6 | 12.1 | 12.7 | 13.3 | 13.9 | 14.4 | 15.0 | 15.6 | 16.1 | 16.7 | 17.3 | 17.9 |
| Volleyball (moderate)           | 3.4         | 3.8 | 4.1 | 4.4 | 4.8 | 5.1  | 5.4  | 5.8  | 6.1  | 6.4  | 6.8  | 7.1  | 7.4  | 7.8  | 8.1  | 8.3  | 8.8  | 9.1  | 9.4  | 9.8  | 10.1 | 10.4 |
| Volleyball (vigorous)           | 5.9         | 6.4 | 7.0 | 7.6 | 8.1 | 8.7  | 9.3  | 9.9  | 10.4 | 11.0 | 11.6 | 12.1 | 12.7 | 13.3 | 13.9 | 14.4 | 15.0 | 15.6 | 16.1 | 16.7 | 17.3 | 17.9 |

Aerobic Dance

During the Spring Quarter (beginning March 16) another Aerobic Dance group will be organized. We plan to offer the class during mid-morning or at noon. Should you be interested, or have a time preference, please let us know. Phone 255-3105 or 255-3637.