

2-1994

# Human Performance Lab Newsletter, February 1994

St. Cloud State University

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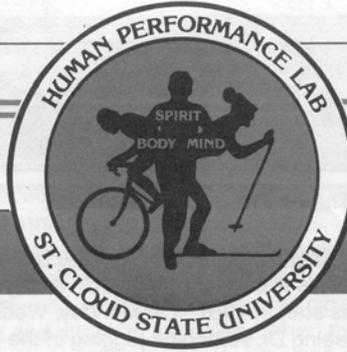
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## KELLY'S CORNER

When our adult fitness program was initiated over 20 years ago, we purposely chose the logo with three physically active people and the body, mind, spirit inscription. This was done because we believe physical activity is an essential ingredient for good health. We also believe, however, that our health status is dependent upon the interaction among the three elements (body, mind, spirit) of our being.

I am pleased that we have reached the point where nearly everyone recognizes the important relationship between physical activity and health. The media provides a surprising amount of attention in its coverage of the benefits derived from exercise. Popular topics include maintaining healthy cardiovascular systems, building strong bones, weight and blood pressure control, cancer prevention and stress management.

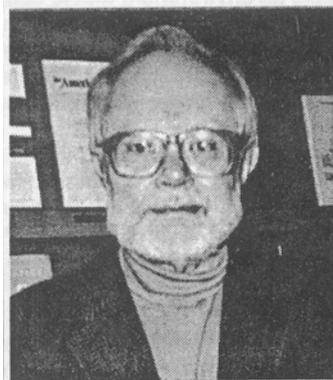
There is no question that improvement in our physiology is a big reason why so many have chosen to include regular exercise within their lifestyles. I am, however, even more pleased that we are beginning to recognize the importance of the interaction between physical activity and emotional health. While those who stay in good condition have known intuitively for years that they "feel better" when they are active than when they fall into sedentary routines, it is only recently that evidence is becoming available to explain this phenomenon.

When thinking about it, it's not too difficult to see how exercise impacts brain function when you remember that every one of your millions of muscle cells are connected to your brain. Every muscular movement that we make involves the nervous system and it is this activity that somehow soothes the part of our brain that determines emotional outlook.

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## *The Fit Philosopher*

*by Sonya Hanson*



An added twist to this year's newsletter includes a feature story about Dr. Myron Anderson who has participated in the Adult Fitness Program for the past 13 years. Dr. Anderson has been a professor of Philosophy at SCSU since 1965. It wasn't until the summer of 1981 that Dr. Anderson decided to start an exercise program and begin his annual assessment at the HPL. Since then, he has maintained his exercise program with true dedication.

What was it that inspired Dr. Anderson to start an exercise program at 51 years of age? Primarily, it was the use of the indoor track in the Halenbeck fieldhouse. The consistency of being able to run in

the same place under the same conditions was an important factor to his start.

Contrary to the majority of the population, Dr. Anderson does not have a problem maintaining his exercise program. When he sets his mind to something, he just does it. The most important part is to establish a routine. "Once I establish a routine, I stick with it and I don't quit. It's establishing the routine that is the toughest part. I started with 21 laps of brisk walking, gradually worked up to a walk/jog and now I am jogging 42 laps (6miles)." Since 1981 he has been dedicated to his exercise routine and feels the necessity to keep doing it. "If I feel tired and not up for a jog, I know when I start I will feel better and it will help me for the rest of the day."

We have seen first hand what exercise has done for Dr. Anderson through the results of his fitness assessments done each year in the HPL. Dr. Anderson has allowed us to share some of the remarkable accomplishments he has attained in many areas of our fitness testing. For instance, in 1981 he completed 10 minutes on the treadmill exercise stress test which is the fifth stage at a 10% grade. By 1987 he had advanced to complete the ninth stage at a 20% grade lasting a total of 18 minutes. This is estimated to be a VO2 of 45+, a high fitness level for someone 20 years younger. And he has maintained that high fitness level ever since - WOW!

Additionally, Dr. Anderson has increased his flexibility since age 51 and is also 12 pounds lighter. How can this be? Statistics say that people tend to lose flexibility and gain weight as they age. Is Dr. Anderson an exceptional case or could it be possible to offset the statistics if one engages in routine physical activity?

It is likely that most of you receiving this newsletter have exercised at one time or another. If not, you've probably had good intentions. For many people, starting an exercise program is only part of the battle, maintaining exercise is often the toughest part. Perhaps, the remainder of this article consisting of a combination of tips for maintaining an exercise program along with some characteristics Dr. Anderson has established that keep him on track, will help you with your program.

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# ADULT FITNESS PROGRAM

## KELLY'S CORNER continued

Recently, studies have indicated that physical activity promotes the release of chemicals known as endorphins and enkephalins which act as natural opiates, reducing our perceptions of pain under conditions of stress. No wonder that present day pain clinics use exercise to help those suffering from chronic pain. These pain modifying chemicals may also be related to the good feelings we experience after a pleasant workout or invigorating walk.

There is also some evidence that physical conditioning enhances circulation within the brain. This suggests that new capillaries are formed thereby providing better nourishment. If this is true, it is not unreasonable to conclude that individuals with well nourished brains have better chances for maintaining sound emotional health.

It is satisfying to see the benefits of physical activity finally receiving scientific support and public acceptance. In my opinion, it is not unlikely that we will become even more certain about the role physical fitness plays in health enhancement. We may come to the realization that physical activity, in fact, is the cornerstone of good health.

So our recommendation for you is to keep moving and, by all means, keep enjoying the process of building strong physical and emotional health.

## A TRIBUTE TO BRADY

We were all deeply saddened to lose our good friend Brady Watts. Brady had been a longstanding member of our Adult Fitness Program who provided great support for our activities. Brady's accounting and financial assistance were especially helpful. We are very appreciative to Brady's family for identifying the Adult Fitness Program for memorials in Brady's memory.

(The Fit Philosopher continued)

### 1. Make exercise a life-long habit

This is one feature that Dr. Anderson has successfully acquired and lived by since his start in 1981. On Monday, Wednesday and Friday at 2:30 p.m. you can count on seeing Dr. Anderson jogging in the SCSU field house. He has made this a set routine and does not allow for anything to interrupt this schedule.

### 2. Find ways to reward yourself

Rewards can be as small as taking along hot bath, calling a friend who lives far away, or relaxing for 15 minutes after you have finished your exercise routine. Perhaps you set short and long-term goals prior to the start of your exercise program. Once you have reached certain goals you may reward yourself with something more significant like a massage, new workout attire, or a vacation.

### 3. Create an environment that is supportive and encouraging

For example, develop friendships with people where ever you exercise who are interested in the same activities. These acquaintances can help you keep up your motivation. Gain support from coworkers or family to whom you can report your progress. These groups will often comment on the positive changes you have made, creating more support.

Dr. Anderson was inspired to start an exercise program by a colleague who had been running for 25 years and only missed five days. Dr. Anderson did not set out to accomplish such extraordinary goals but is motivated by his ability and self-discipline to maintain his own level of exercise. Perhaps there is someone you look up to that can serve as motivation for you to keep exercising?

### 4. Have a positive attitude

The art of positive thinking can greatly contribute to your motivation. Thoughts, feelings and behavior are all part of a cycle in which one influences the other. The following is an example of how negative thoughts can affect your program.

THOUGHT	I don't have time to walk three times per week.
FEELING	I'm tired and I don't feel like exercising so I'll just skip a few days.
BEHAVIOR	I ultimately give up on my entire walking program.

Now let me illustrate how a positive attitude can help you maintain your program.

THOUGHT	I do have time to walk three times per week. I have made this a top priority. I know the benefits I receive will improve my health.
FEELING	I feel good about my program. I feel better about myself.
BEHAVIOR	I successfully maintain my program.

Surrounding yourself with positive cues that remind you to exercise is important. Positive cues may include:

- 1) circling the days you plan to exercise on a calendar,
- 2) keep your exercise clothes visible and with you,
- 3) tell someone about your exercise plans for the day,
- 4) develop a routine

Dr. Anderson has developed a very set routine which he strictly follows. For instance, before each 6 mile jog he consumes a chocolate power bar, jogs 14 laps, takes a pulse check, jogs 10 laps, assesses his weight, jogs 10 more laps, monitors his heart rate again and finishes with 8 more laps. All of this while listening to MN Public Radio on his walkman. This may seem like a strict and somewhat monotonous system but it works for Dr. Anderson. Many people need a variety of activities to stay motivated in an exercise program and that's fine. Find what works for you and stick with it!

Congratulations Dr. Anderson on your successful fitness accomplishments!

# ADULT FITNESS PROGRAM (cont.)

## Heart at Work

by Mary Kazemba

Cardiovascular disease is the leading cause of death in the United States. Last summer I had the opportunity to get an inside look at this problem--literally. I interned for five weeks in cardiac rehabilitation at Sioux Valley Hospital in Sioux Falls, South Dakota. During this time I observed coronary artery bypass surgery, angioplasty, various types of diagnostic stress tests, and all phases of rehabilitation. I feel fortunate to have had this learning experience. Most of my time was spent assisting in phase 11 (outpatient) and phase III (maintenance) rehabilitation.

The most interesting case was that of a 23 year old college football MVP who had a heart attack which was believed to be related to getting electrocuted when fixing a light switch. He unfortunately can no longer play football. However, he has little, if any, permanent damage to his heart and has adapted a far healthier diet and lifestyle than previously.

### A few interesting facts I came across:

- In many cases, the coronary artery/arteries are over 90% blocked before any symptoms develop.
- 10% of heart attacks are silent.
- Coronary heart disease is the leading cause of death in females over 40 -greater than all cancers combined.
- Depression in individuals with risk factors for heart disease magnify the dangers associated with those risk factors,
- Approximately 70% of heart attacks are precipitated by major stress within a 6 month time period.

## Injured? Blame it on the Hamstrings

by Julie Deyak, ATC

A lot of active people have experienced a cramped, strained, or pulled hamstring. However, some of you who have low back, knee, lower leg and/or foot pain may also be having problems with your hamstrings.

Because of the large involvement of the hamstrings in physical activity, numerous other conditions may occur when the hamstrings encounter problems. Hamstrings cross the hip joint and attach to the pelvis. When the hamstrings are tight they tend to pull the pelvis in a downward motion, causing the lumbar spine (low back) to flatten out. This-loss of lumbar lordosis in the lumbar spine significantly increases stress on the low back, which can cause lumbago or simple, nondescript low back pain. Stretching the hamstrings will help resolve low back pain caused from this type of problem.

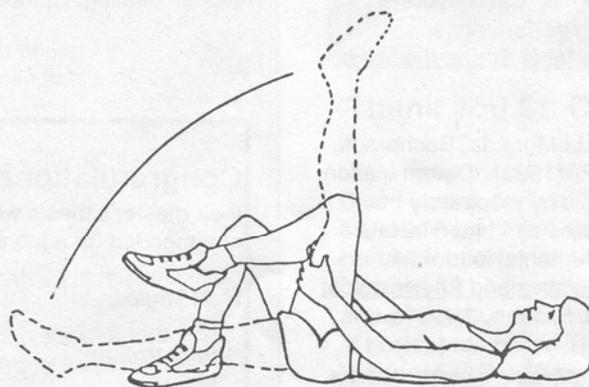
Moving further down the leg, chronically tight and/or weak hamstring musculature can also put a significant stress on one's knee joint. Individuals who have complaints of anterior knee pain or pain just behind the knee cap suffer from what is known as chondromalacia; this is a medical term to describe a softening or irritation of the hard smooth shiny cartilage on the back side of the knee cap. Tight and/or weak hamstring musculature relative to quadriceps strength can cause chondromalacia. However, tight hamstrings seem to be more of a culprit in this matter, as they tend to not allow full motion of the knee. This leads to increased compression of the knee cap in the groove of the thigh bone.

This chronic compression of the knee cap cause rubbing and irritation to the back side of the knee, as well as significant knee pain. This, like the back condition, will resolve with a good stretching and strengthening exercise program for the hamstring musculature.

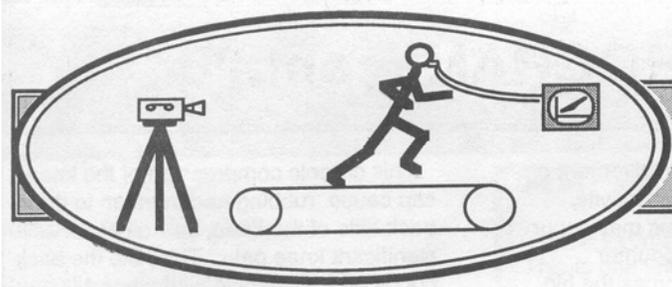
As we move to the lower leg, anterior lower leg pain or shin splints and foot/arch pain can also be related to a tight hamstring muscle group. For normal mechanics to occur with walking, all muscle groups must be working in a synchronized cycle.

Tight hamstrings, one of the most common problems in runners, can throw this cycle off. This can lead to shin splints and/or flattening of the longitudinal arch, causing increased pronation. These are only a few examples of problems that can be caused by inappropriate flexibility and/or strength in the hamstring muscle group. Normal hamstrings flexibility for the active population is illustrated in Figure 1 below. One should be able to move their leg, while keeping it perfectly straight, towards the upper body to at least a 90 degree angle. Anything less than this is unsatisfactory, and can play a significant role in numerous musculoskeletal problems.

Figure 1 - Hamstring Stretch



Lie flat on your back with one leg bent, grasp leg below knee and pull toward chest, keeping leg straight. Stretch to the point of tension, not PAIN. Hold the stretch for at least 30 seconds, keeping the hamstrings relaxed.



# HPL RESEARCH

## PRESENTATIONS AT THE 1993 ACSM MEETING

Marquardt, J., Bacharach, D. and Kelly, J. *Predicting 30 second minimum power from a 20 second Wingate test.*

Hilden, T., Bacharach, D., Rundell, K., Szmedra, L., Taylor, M., Wetzstein, C., vonDuvillard, S., and Street, G. *Upper body power testing as a predictor of success in elite male biathlon skiers.*

Gaskill, S. Hilden, T., Marquardt, J., Bacharach, D. and Street, G. *Physiological changes during one year of training for national level cross country skiers.*

Rundell, K., Bacharach, D., Zieske, R., McIntosh, D. and Harlan, J. *Comparison of physiological variables between ski walk and running protocols in elite female biathlon skiers.*

## 1993 RESEARCH PUBLICATIONS

Bacharach, D. W., von Duvillard, S.P., Rundell, K., Szmedra, L., Castle, J., Cring, M., & Meng, J. *Carbohydrate drinks and cycling performance. International Journal of Sports Medicine.* (In Press).

vonDuvillard, S., LeMura, L., Bacharach, D. and Di Vico P. (1993). *Determination of lactate threshold by respiratory gas exchange measures and blood lactate levels during incremental load work. Journal of Manipulative and Physiological Therapeutics,* 16, 5. June. 312-318.

**“Measurable health improvement occurs from burning as little as 500 calories per week through exercise”**

## PRESENTATIONS AT THE 1993 AAHPERD MEETING

Bacharach, D., Rundell, K., Szmedra, L., Hilden, T. and Street, G. *Upper body power tests are useful in predicting success of elite biathlon skiers.*

Hilden, T., Bacharach, D. and Wetzstein, C. *V02max at lactate threshold as predictors of performance success in elite biathlon skiers.*

Marquardt, J., Bacharach, D. and Kelly, J. *Comparison of power outputs generated during 20s and 30s Wingate tests.*

Szmedra, L., vonDuvillard, S., LeMura, L., Sproule, W., Bacharach, D., Meng, J., Kelisih, M., Fatouros, J. and Buchenmeyer, P. *Influence of headphone music on cardiovascular hemodynamics, perceived exertions and plasma lactate during treadmill running.*

Bacharach, D., Meyer, R., Weinberg, R. and Taylor, M. *Evaluating training programs for elite biathletes using neural networks.* Presented at the American Statistical Associations National Meeting, October, 1993.

## Just for fun, test your knowledge of basic nutrition

- which fruit has the most fiber?
  - small banana
  - 10 cherries
  - Small pear
  - 1/2 cup of blackberries
- Which food additive should you limit if you wish to lower your risk of high blood pressure?
  - monosodium glutamate
  - disodium phosphate
  - table salt
- Ture of False: Many common health problems can be solved if people take megadoses of vitamins?
- An adult should take in \_\_\_ glasses of fluid per day?
  - 2-4
  - 8-10
  - 3-6
  - 10-12.
- Which food provides 90% of your daily requirements for vitamin A and 200% for vitamin C.
  - orange
  - squash
  - broccoli
- How many serving of fruits and vegetable should a person have each day?
  - 4-5
  - 3-4
  - 5-6
  - 2-3

**Congratulations** are in order for the following students who have completed their master's thesis work. This is a great accomplishment and they should be commended for a job well done.

- |                             |   |
|-----------------------------|---|
| <b>Matt Taylor:</b>         | The effect of sprint chute training on sprint speed.                  |
| <b>Shelly Raiche:</b>       | Energy cost of various phase one cardiac rehabilitation exercises.    |
| <b>Dean Birchfield:</b>     | Metabolic cost of bench stepping with and without 2 lb. hand weights. |
| <b>Michaela Cruikshank:</b> | Effect of warm-up on power output.                                    |

# GRADUATE PROGRAMS

## MEET THE NEW STUDENTS

**MARK NOAH** - Mark is from Fargo, NU. After receiving a B.S. in Physical Therapy from the University of North Dakota, Mark stayed in the Fargo-Moorhead area and gained related work experience. He served as Director of Physical Therapy at St. John's/Ansgar Hospital, and most recently, as Director of Hockey Acceleration at the Red River Valley Sports Medicine Clinic. Mark is engaged to be married in June. His interests include sports medicine and hockey research, and such hobbies as water skiing, downhill skiing, ice hockey and dancing.

**JANICE ENGBRETSON** - Janice is a second year student in Exercise Physiology and currently resides in Barren, MN with her husband and three boys. She attended Luther College and obtained a B.A. in Math and German. Janice has a broad interest in exercise physiology and is looking forward to her internship to decide upon a career direction. Janice is a certified fitness instructor and personal trainer. She enjoys being physically active with weight training, tennis, or teaching aerobics as she does 3-4 days per week at Northland Fitness Center.

**WEBB SMITH** - Webb has brought his Southern charm and pace of life to the frantic world of the HPL. As Webb will surely attest, St. Cloud is a far cry from Appalachian State University (in Boone, North Carolina), where he graduated in 1993 with a degree in Exercise Science, Webb is pursuing his Masters degree in Biomechanics, with a possible research focus on strength and conditioning as it relates to human performance. His ultimate goal is to one day withstand a wind chill of absolute zero, but Webb's more immediate interests include baseball, boxing, and learning to ice skate.

**PAUL GUY**- A 1992 graduate of St. Olaf, Paul is in his first year as a graduate assistant, majoring in Biomechanics. After completing his Master's he hopes to pursue a career in golf equipment design. His hobbies include golf, gourmet cooking, and volleyball. He also holds a special interest in South Africa, where he spent six months as a volunteer, establishing sport programs in the townships. Although his parents currently live in Omaha, Nebraska, Paul has lived in a variety of settings including Texas and Alaska.

## OUR GRATITUDE

The staff and students at the Human Performance Lab would like to thank the following people for their contributions to the Adult Fitness Program in 1993.

Ms, Michelle Anderson  
Mr. & Mrs. Allan Andreotti  
Drs. David & Nancy Bacharach  
Central Collection Service Inc.  
Dr. & Mrs. Ray Collins  
Ms, Mary Beth Cochran.  
Fraternal Order of Eagles  
Dr. A Mrs. Dennis Fields  
Mr. & Mrs. James Gammell  
Mr. & Mrs. Curtis Ghylin  
Mr. Patrick Karns  
Mr. & Mrs. Lee Kasper

Mr. & Mrs. David Kunze  
Mr., & Mrs, John Hafner  
Dr. Abdalla Hanafy & Earleen  
Helgelein-Hanafy.,  
Dr. Jeffrey Holmberg  
Mr. & Mrs. Tom Lembeck  
Mr. & Mrs. Roger Moran'  
Dr. Ruth Nearing  
Dr. Harry Olson  
Dr. & Mrs. Frank Osendorf  
Dr. & Mrs. John Pike  
Ms. Sally Plante  
Ms. Judith Seitz  
Mr. & Mrs. Les Sova  
Dr. and Mrs. Glenn Street  
Mr. & Mrs. Brady Watts  
Dr. Dee Whitlock

## GRADUATE STUDENT RESEARCH

Influence of resistive speed training on leg

power and sprint performance in collegiate softball players.

Sonya Hanson: The effect of step rate and choreography on the metabolic cost of step aerobics.

Mary. Kazemba: Accuracy of the current ACSM cycle ergometry equation and an alternative equation for young adult females.

Mary Jo Donovan: 'Smokeless tobacco effects on batting abilities and psychomotor task performance of baseball players.

Lori 'Anderson: Masticatory muscle activity with varying head postures.

JKa , rd Brown: Relationship between critical power and anaerobic threshold of trained swimmers during arm ergometry.

## Thank you St. Cloud Eagles

We again extend our thanks to the St. Cloud Eagles Aerie #622 for the \$5,000.00 grant that was awarded to the Human Performance Lab. The money is targeted for equipment and programming and will help us continue with our efforts in health promotion. This is especially important during times when other funding sources are unavailable.

We also are grateful to the Eagles for the \$1,000.00 memorial they presented to the Adult Fitness Program in memory of Brady Watts.

### Answers To Nutrition Quiz

- 1 d. 1/2 cup of blackberries contains 3.7 grams of fiber; a small pear 2.5; a small banana 1.3; and 10 cherries 9 gram of fiber.
2. All. Sodium is essential to many metabolic functions, but most people can get the sodium the body requires from a well-balanced diet.
3. False. Megadoses of some vitamins can actually be harmful. The best course is to eat a diet rich in fresh fruits, vegetables and complex carbohydrates.
4. b. Fluid can come as water, fruit juice, milk, coffee tea, fresh fruits and vegetables. Since caffeine is diuretic, heavy coffee or tea drinkers should make an effort to add fluid from other sources.
5. c. One serving of broccoli also provides about 25% of your daily fiber needs, is one of the vegetables that may protect against certain forms of cancer, is rich in potassium and has 5 grams of protein.
6. c. A variety of fruits and vegetables may help reduce your risk of cancer because they are low in fat and rich sources of fiber and vitamin A and C.

### **Financial Support**

We greatly appreciate the financial support many of you have provided over the years. Tile money has been instrumental in helping the Human Performance Laboratory's programs. We are always so gratified to know that you believe in our work enough to personally invest in it.

Should you be in a position to make a contribution to the Human Performance Laboratory, please make checks payable to: SCSU Foundation-Adult Fitness,

Send Checks to.

SCSU Foundation  
St. Cloud State University  
Alumni & Foundation Center  
720 4th Ave. South  
St. Cloud, MN 56301-4498

### **CHANGE OF ADDRESS?**

If your address has changed please send in your new address so that we can let you know what's happening here at SCSU's Human Performance Lab.

Name\_\_\_\_\_

New Address\_\_\_\_\_

Phone\_\_\_\_\_