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March 1999

Metabolife Review by Mollee Ludtke

The latest craze in weight loss?

Radio announcers are broadcasting their own personal success stories; kiosks are being set up in the aisles of shopping malls. Metabolife: even the name sounds healthy enough, scientifically safe enough to peak one's interest.

How exactly does Metabolife work? Is it safe? Is it healthy? These are questions many people are asking. Metabolife interested us too. So, we did some research on its individual ingredients. From there we were able to interpret just how Metabolife may be working in the body to achieve what they advertise: "raise the body's metabolism and create a thermogenic response".

Metabolife's ingredients include: **Vitamin E** (6 i.u.) - necessary for oxidation and the normal chemistry of muscle and red blood cells.

Magnesium (as Magnesium Chelate) (75 mg)-needed by the mitochondria for energy production.

Zinc (as Zinc Chelate) (5 mg)-helps make enzymes involved in metabolic functions.

Chromium (as Chromium Picolinate) (75 mg)-necessary for burning carbohydrates.

Guarana Concentrate-(40 mg)- used as an appetite suppressor and reliever of headaches, cramps and fevers. Guarana is a naturally occurring caffeine. It is reportedly 2.5 times stronger than the caffeine found in typical food and drink.

Ma Huang Concentrate (12 mg) - ephedrine-containing stimulant used to "jump-start" the central nervous system.

Bee Pollen - good source for all vitamins, minerals, essential proteins, amino acid enzymes, and coenzymes needed by the body.

Siberian Ginseng-used to aid the body in stressful, physical and mental situations. It is thought to increase energy, enhance longevity, and cure urinary tract infection.

Ginger-used to treat morning sickness and postoperative nausea. Ginger increases gastric motility and decreases stomach acidity.

Lecithin-helps solubilize fat in the small intestine.

Damiana-known as a sex stimulant; referred to as the "herbal alternative to Viagra", it contains alkaloids which can produce euphoria.

Sarsaparilla-enhances liver and kidney function, opens pores in the skin, and stimulates bowel movements.

Golden Seal-referred to as "nature's antibiotic", reported to reduce swelling.

Gotu Kola-used to treat depression, skin disorders, hemorrhoids, and arthritis; promote relaxation, and relieve stress.

Spirulina Algae-good source of vitamin B-12 essential for cell metabolism. May cause joint trouble and gout.

Royal Jelly-rich in proteins, essential amino acids, minerals, and pantothenic acid, which has been found to lower stress levels.

All of the ingredients in Metabolife, which can be bought individually, appear to have a similar effect on the body: They attempt to give various body functions "a boost". Metabolife does not specify just how much of each herbal ingredient is included in each serving; rather they label it as an "herbal blend". This is something of a concern.

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EXCITING NEWS!!

Medial Tibial Stress Syndrome aka Shin Splints

By Erie Fenstad and Mike Rasmussen

Contrary to what the name may imply, shin splints is a muscular injury and is therefore more correctly termed medial tibial stress syndrome. The injury involves microtears of the posterior tibialis muscle away from the tibia (shin bone). Shin splints is one of the more common injuries to the lower extremities and accounts for nearly 2/3 of tibial injuries. Several factors may contribute to the onset of shin splints. Poor running mechanics, tight calves (achilles tendon), muscle weakness, improper footwear, overuse stress, falling arches, and/or running on a large variety of surfaces (i.e. grass, asphalt, cement, dirt trails) in combination or alone, can lead to the development of shin splints. However, the major mechanism of injury involves a strain of the posterior tibialis muscle which attaches to the tibia. Before treating shin splints, one must gather information that could lead to the assessment of how the injury occurred. For example, the onset of shin splints often accompanies changing terrain, it is often seen in a football player who participates on a grass field and then transitions to basketball season on a hardwood floor. What could be identified as shin splints may in fact be a result of underlying structural abnormalities such as a stress fracture or muscle herniation in the lower leg. Therefore, the need for an evaluation by a physician may be recommended.

Diffuse pain and stiffness over the tibia are often associated with the occurrence of shin splints. Early stages of shin splints may only involve pain after exercise. However, as the condition progresses, continuous pain may arise affecting everyday life in addition to exercise performance. If not treated properly, the injury can develop into a stress fracture. Shin splints, like most muscle injuries, can be treated with ice (ice massage), compression, rest, stretching, anti-inflammatories (e.g. aspirin) and/or ultrasound. If foot mechanics is suspect, orthotics may be a required intervention. If training services are available (high school or college institution), supportive taping of the longitudinal arch may also provide pain relief.

Precautionary measures can be taken to reduce the risk of developing medial tibial stress syndrome. Researching different shoe types/brands can lead to a better fitting shoe which will best suit the individual's preferred mode of exercise. Avoiding sudden changes in terrain from season to season can decrease the likelihood of shin splints as well. Because shin splints is a muscular injury, proper warm up (stretching) is always essential prior to exercise. Incorporating these preventative measures can ensure enjoyable and pain free exercise.

Division I Women's Hockey comes to SCSU

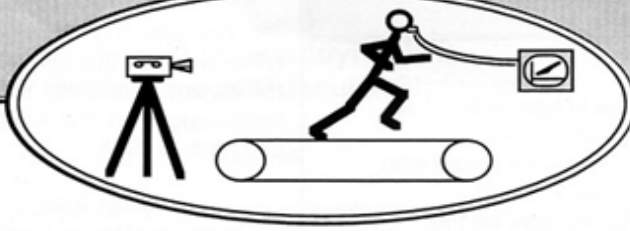
by Scott McMillan

After many years of competing at the club level, SCSU now has a full fledged NCAA Division I women's hockey team. Female participation in ice hockey has boomed since 1990 with the birth of the first International Ice Hockey Federation Women's World Championships. During 1990, there were 6,300 women ice hockey players in the United States. As of last season, the number has grown 430 to 27,000 players.

The United States and Canada have dominated International Hockey in the 1990s. In an exciting and tough fought game, the US team was able to pull off a gold medal victory in Nagano during the 1998 Winter Olympics. With that win, USA hockey is expecting another boom in female participation this year.

At the Human Performance Lab we are excited to be able to assist our new team with their strength and conditioning. Last fall we put the team through a series of on-ice and off-ice performance tests. Performance testing is a great way for teams to monitor conditioning progress and motivate athletes. Players can be retested throughout the year to make sure they are either maintaining or improving their levels of fitness. Any necessary adjustments can then be made in their practices and strength training to ensure optimal results.

We tested the women's hockey team for anaerobic power (explosiveness), anaerobic capacity (how long they can maintain their power), aerobic endurance (how many times they can be explosive), agility and strength. We also tested new on-ice tests for forwards and defensemen that simulated a shift in a hockey game. These tests appeared to work really well and we hope to be able to compare the team's results at mid and post season. Since it is a relatively young sport, there were very few standards from which to compare the SCSU team. Even though men's hockey has been popular for years, especially in Minnesota, there hasn't been very much research done related to proper training. For these reasons, we felt it necessary to present the women's team results at the upcoming American College of Sports Medicine National Conference in Seattle.



Metabolife Review continued from page 1

Some of these ingredients, when taken in excess, have been reported to be hazardous. It should be stressed that with any new product there is always some uncertainty pertaining to potential side effects.

A credit to Metabolife is that they don't promote simply taking the tablets to experience weight loss. They stress a healthy diet. Each pill is instructed to be taken with or just before a meal. We received meal plans by calling the number on the back of the Metabolife brochure. They advise well-rounded choices and combinations of foods necessary for achieving a balanced diet, which in effect is the body's "natural" way of stimulating metabolism.

With the right combination of physical activity and eating a balanced low fat diet that includes the necessary nutrients for the body, metabolism can be accelerated to an optimal level. It appears to us that Metabolife simply provides a mix of ingredients which attempt to "shock" the system into doing the same thing.

Assisting Amputees

First year graduate student, Wayne Board, along with advisor Dr. Glenn Street, are currently working with Total Environment Control (TEC) of St. Cloud that manufactures prosthetic socket liners for amputees. Wayne and Glenn are part of a research group that includes Dr. Steve Covey and his students, Josh Muonio and Troy Pierson, from the Manufacturing Engineering Department at SCSU.

TEC is a world leader in the development and production of soft pliable polyurethane liners that act as cushions between an amputee's stump and the prosthetic socket. All liners eventually fail (crack or rip) because of limited durability and/or poor fit between the stump and socket. To help TEC evaluate new liner materials, a durability test is being developed. In addition to trying to develop a more durable liner, the team is identifying the conditions that lead to these failures, it is thought that a poor fit is responsible for most liner failures. This poor fit is a result of the stump losing volume throughout the day. The team is measuring volume loss so that it can design a socket that can compensate for volume shifts and improve longevity of the liner.

Testing and Research Dr. John Seifert

The lab is alive with the sound of... creaking ergometer cranks. We completed a busy and fruitful year in 1998 and another busy year is upon us. Our tradition of aiding the athletic department was evident this year. Testing was completed on women's cross country skiing, women's volleyball, men's and women's ice hockey, women's basketball and the swim teams.

As a research update, our super-oxygenated water study was quite interesting. While we did not observe significant differences in treatments, trends in lower $\dot{V}O_2$ and time trial performance were certainly evident.

In a carbohydrate, CHO, feeding study, muscle damage indicators were reduced when CHO and a small amount of protein were ingested.

In a unique exercise study, we made a comparison between riding a tandem and single bicycle. Experienced tandem riders served as subjects. Blood lactic acid levels average 37 lower on a tandem. Heart rate was about 11 lower on a tandem compared to when they rode their single bikes. Not only does tandem riding allow for greater social interaction, but two people who are physically mismatched can ride together without dropping the weaker rider and both can ride at relative levels to gain the healthy benefits of exercise.

We are looking forward to another productive year in the lab. Future studies include CHO gel ingestion and cycling performance, cell membrane peroxidation during exercise and mountain bike shock research.

New Graduate Students

Paige Baker is focused on exercise physiology. Her undergraduate work was in psychology at Pepperdine University in California. Though she very much misses the ocean and warm weather, she says she is thrilled to be here. Her spare time is usually spent training with the Northwest Running Club in Minneapolis. She is looking forward to running the Boston Marathon this coming April.

Wayne Board is from Maple Grove, MN. He graduated from St. John's University in 1993 with a B.A. in Biology and English. After graduating he moved to Colorado to train for triathlons. While there he enjoyed skiing, mountain hiking, and climbing. In his free time, he enjoys training for triathlons, cross-country skiing and sport climbing.

Kristi Chupurdia is from PengilSy, MN. She graduated with a B.A. in Exercise Science from the U of M at Duluth. She plans to continue her education pursuing a doctoral degree in exercise physiology. She has spent considerable time interning in cardiac rehabilitation. However, research is her current focus. When not in the Human Performance Lab, she teaches aerobics, runs 5K races and spends time with her family and friends.

Eric Fenstad is a native of Fargo, North Dakota. He graduated from St John's University (MN) with a B.A. in Psychology and a minor in Athletic Training. He is employed at Campus Rec where his duties include fitness coordinator of W.W. Holes Hall. When he is not in the Sab, Eric enjoys fishing, weight-lifting, baseball, and throwing the javelin for the SCSU Track and Field team.

Mollee Ludtke is from Albert Lea, MN. She graduated from Concordia College-Moorhead with a B.A. in Biology. While at Concordia, Mollee was on the women's track and field team. In her spare time, she enjoys running and working out, watching and attending sporting events and in the summers, she also enjoys the "lake life".

Scott McMillan is from Calgary, Alberta. He graduated with a Bachelor of Kinesiology in Biomechanics in 1996. Over the last few years he has worked as a strength and conditioning coach and a personal trainer. He loves to ski, play hockey and now enjoys competing in triathlons.

Mike Rasmussen is originally from Austin, MN. In 1997 he graduated from the University of St. Thomas with a B. A. in Pre-Physical Therapy and Athletic Training. Mike is pursuing a Master's Degree with an emphasis in Biomechanics. Mike enjoys inline skating, rock climbing, and strength training.

CONGRADULATIONS!

The faculty and staff at the Human Performance Laboratory would like to acknowledge and congratulate the exercise science graduate students who completed their thesis work and earned a Master of Science degree in 1998:

Kiralee Camp
Julie Deyak
Joel French
Sonya Hanson
Kirk Lewis
Caryn Locke
Deb Meierhofer
Kirk Olson
Debbie Paulson
Shannon Ready

OUR GRATITUDE!

The staff and students at the HPL would like to thank the following people for their contributions to the Adult Fitness Program in 1998:

Karen Askim
David and Nancy Bacharach
Ron and Mary Beth Cochran
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Stephen and Elaine Thrune

Because of your generous support, the HPL purchased a copier and two computers in 1998. We greatly appreciate the financial support many of you have provided over the years. 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
St. Cloud State University
720 fourth Avenue South
St. Cloud, MN 56301-4498

Quick Tip

Even a quick sweat can help your heart: In one study, men who exercised vigorously for just 11-14 minutes twice a week reduced heart attack risk by 36%

THESIS WORK IN PROGRESS.....

The Effects of Phosphatidyl Serine Ingestion on Markers of Muscular Stress In Runners by Keli Holmes

Phosphatidyl serine (PS) is a naturally occurring membrane (phospholipid). It has been suggested that PS could relieve some of the muscle soreness (caused by muscle damage) that is felt after strenuous exercise. The effectiveness of PS depends on the mechanism that causes the muscle damage. If damage is incurred by a mechanical means, PS will have no effect. On the other hand, metabolic damage could be reduced by PS because of its hypothesized ability to interrupt the catabolic hormone response during strenuous exercise. A previous study concluded that a dosage of 800 mg/day of PS was effective at reducing the markers of muscular stress, primarily creatine kinase and cortisol. In this study, PS will be administered in dosages of 600 mg/day and 300 mg/day. During the 90 minute performance run, cortisol, creatine kinase, and blood urea nitrogen levels will be measured at 30 minute intervals. The degree of change in these variables will determine the successfulness of PS in reducing the markers of muscular stress in runners.

The Effects of an Herbal Supplement on Lactic Acid Clearance by Jason Lahr

My thesis tested the herbal supplement called 2nd

Wind ARX. 2nd Wind is a combination of several herbs, including ginseng. Until last spring, there had really only been one study testing this supplement. This preliminary study showed that 2nd Wind did in fact increase lactic acid clearance in unfit individuals. In my study, fit individuals were used to see if similar results would be found. My subjects were randomly placed into one of two groups: placebo or experimental. The placebo group received a noncaloric pill while the experimental group received the herbal supplement.

After a high intensity bike ride, blood samples were taken and analyzed to find if there were any physiological differences between the placebo and experimental groups. I measured lactate acid levels, bicarbonate levels, and the pH of each blood sample, in comparison to the placebo group, ingestion of the supplement led to a lower lactic acid accumulation after intense exercise, less stress on the bicarbonate buffering system, and a strong trend toward improved performance during high intensity cycling.

Effects of Carbohydrate Supplementation on Nordic Ski Endurance Performance by Aaron Nelson

Cross country (x-c) skiing is an endurance activity that involves continuous, simultaneous upper and lower body movements. Skiing at a high intensity for an extended period of time requires a great deal of energy, mainly carbohydrate (CHO), on the part of the ski racer.

According to Coggan and Coyle (1991), CHO supplementation has been shown to enhance endurance performance in sports such as running and cycling.

Little research has been done using x-c skiing performance in a field setting and even less has focused on CHO supplementation and ski performance. The purpose of this study will be to examine the effects of CHO supplementation on 5K cross country ski performance times.

KELLY'S CORNER by Dr. Bacharach

True science teaches, above all, to doubt all things and look deeply at what we see. But sometimes we forget.

This is a true story about an elderly couple who, long ago, wanted to give a gift to Harvard University in memory of their son that had attended Harvard for one year before his accidental death. After waiting nearly a full day, the plainly clothed, homespun couple were permitted to see Harvard's President.

Astounded at their request for erecting a building as a memorial in their son's honor, the president, looking at the worn clothed couple said, "We have over \$7.5 million in the physical plant at Harvard!" The woman turned to her husband and said quietly, "Is that all it costs to start a university? Why don't we start our own?" Her husband nodded. The president's face wilted in confusion and bewilderment as Mr. and Mrs. Leiand Stanford bid him good day. As we know, the Stanfords moved to California and started their own university in memory of the son that Harvard forgot.

If you have ever felt under-appreciated, then you might consider seizing the next opportunity to look deeper into the goodness of others.

As times change and we look for new ways to assist people in their search for healthy living, we welcome any input from you, our extended HPL family. You're not forgotten.

Best regards and keep in touch.

Internship Experience by Jason Lahr

I am completing my internship requirements at the St. Cloud Orthopedic Center. The Orthopedic Center has a long standing record and strong reputation in the area for quality care, as well as promoting fitness in the St Cloud community. Now they are taking further steps to help local athletes to become better at their sport.

Recently, they started a training program for athletes of all ages, called High Energy Advanced Training, HEAT.

Jon Erickson, a SCSU Master's graduate was hired to initiate and promote the HEAT program. The goal of this program is to enhance flexibility, strength, power, and speed, as well as cardiovascular conditioning based on scientific and medical principles. Each participant is trained using weights, plyometric drills, and sprint work. Each athlete is schooled with the proper lifting technique. Plyometrics are tailored toward each athlete's specific sports needs. The Orthopedic Center has also purchased two treadmills on which sprint work can be performed. One of the treadmills is for running and the other is for skating and skiing. The treadmills can be used not only for speed work but also to improve body awareness and overall body biomechanics.

This fall, I had the pleasure of working with Jon to set up workout programs and training schedules for several high school and collegiate athletes. Initially, the athletes are tested for speed, endurance, power, and strength.

Some of the tests used to collect preliminary data include a Wingate bike test, 5 rep bench max test, 1.5 mile run, the t-test, 40 yard dash, dips and pull ups. Once initial data are collected and analyzed, Jon and I set up each person on a workout program to meet his/her individual needs.

As I said before, the program is just starting, so there are still some small bugs to work out, but all in all things have progressed smoothly this fall for the athletes involved in the program. Even at the sixth week of the 12 week program, we saw increases in speed, power, and strength for each individual. For example, the three women college athletes improved their 5 rep max bench test by at least 10 lbs; dropped their 40 yard dash times by at least .5 seconds, and increased their vertical jump by at least two inches.

I have had a lot of fun helping to train these athletes.

One particularly rewarding part of the internship has been to see the improvements made by individuals and hear them say that this is the best shape they have ever been in.

However, the most rewarding part of this type of work is not improvements made in the training room. The ultimate success of an athlete is determined on the court, field, ice or whatever the field of play during competition.

