LSAH Newsletter

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Baseline comparisons of the two LSAH groups

A total of 876 participants are included in the LSAH: 219 astronauts and 657 comparison participants.

The physical examinations completed during the selection year provide baseline data for this study. The matching procedure for those comparison participants selected to date has resulted in a mean baseline age of 32.9. The mean age of the astronauts at baseline is 33.3 years. The distribution of age at baseline ranges from 22 years to 43 years (Figure 1).

Body mass index (BMI) is measured by kilograms of weight divided by the squared measurement of height in meters. This calculation adjusts body weight for height thus facilitating the comparison of body weight between groups which include individuals of varying heights.

The distribution of BMI (Figure 2) ranged from 17 to 33 with a mean BMI of 23.28 for astronauts and 23.34 for comparison participants.

Other baseline data are currently undergoing edit checks and will be reported in a published paper. It is very important that the database include baseline demographic data for those variables which are known to be risk factors for chronic diseases. Complete information regarding characteristics such as race, marital status at baseline, and education are necessary to identify the relationships between occupational exposures and health outcomes. **In the coming months, we will be contacting you to obtain this type of information should it be missing from your medical records.** We will not be able to complete the baseline database without your cooperation. Your continued participation in this study is greatly appreciated.

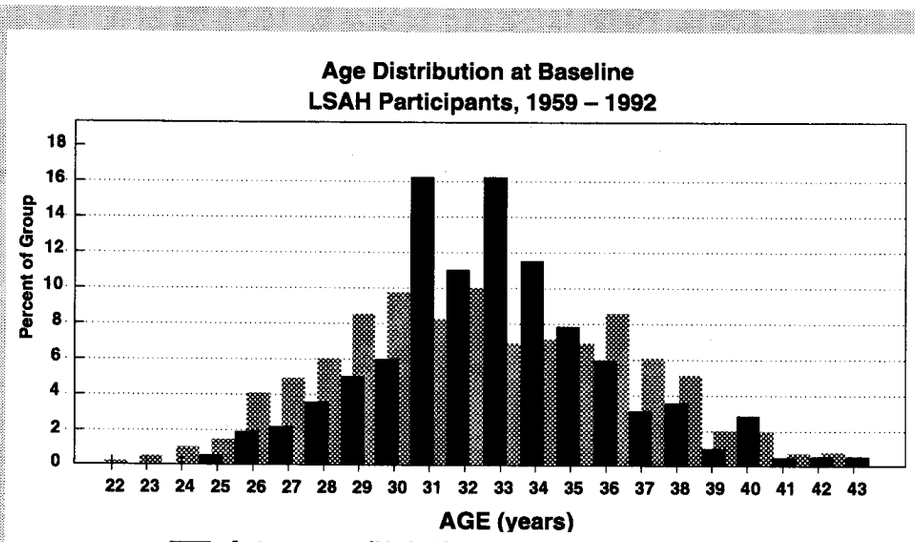

Figure 1

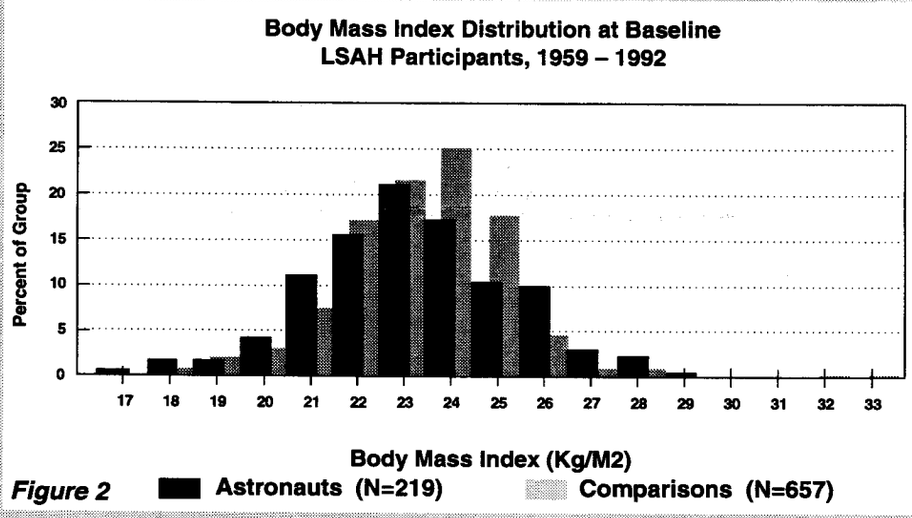

Figure 2

What to expect from your treadmill test and how to prepare

As reported to you in the October 1992 *LSAH Newsletter*, the treadmill test is a part of the LSAH physical examination. What should you expect when you come in for your treadmill test? What preparations should you make?

The test involves walking on a treadmill, starting at a slow speed and slight grade. Every three minutes the speed is slightly increased and the grade is elevated so that you feel like you are walking up a low hill. The test is ended when you signal the nurse that you are tired and want to stop.

A physician will review the preliminary results of your treadmill with you before you leave the Clinic. The results will also be forwarded to the cardiologists at the Kelsey-Seybold Clinic in the Medical Center to be read. Once their report is returned to the JSC Clinic, usually in a week's time, you will be notified of the cardiologist's interpretation.

An assessment of your pulmonary function will also be completed as part of the treadmill procedure. The pulmonary function testing is conducted when you first arrive for your treadmill and will take about 20 minutes. Seated, using a computerized testing device, you will be asked by the nurse or physician to perform several different breathing tests. The data collected provides information on how your lungs are functioning. During the actual treadmill you will wear a headpiece and a mouthpiece to collect data to assess, among other things, your use of oxygen during exercise.

In preparing for the test please avoid caffeine (coffee, chocolate, tea, etc.) the day of the test and bring shirt, shorts, socks, shoes and toiletries with you. A shower and towels are available for use following the test. We ask that you do not eat anything during the two hours before the test. A light meal (soup/salad, cereal/milk) may be eaten before that time if you desire. If you have any questions or concerns about the testing, please call the JSC Occupational Medicine Clinic at (713) 483-7783.

Exercising outdoors? Exercise caution!

With spring and summer quickly approaching, we should be aware of the dangers of exercising outside in the heat. We tend to take for granted our bodies' ability to handle excess heat when we exercise outdoors on a hot day. Heat illness can sneak up on even the most fit individual. Exercising in extreme heat can be very dangerous, even fatal, if the proper precautions are not taken.

Heat illness is caused by prolonged exposure to hot temperatures, high humidity, slow air movement, and increased physical activity. When we exercise, our body temperatures increase depending upon age, fitness level, weight, and the heat index—a combination of temperature and humidity. In higher humidity, sweat does not evaporate as rapidly and can not cool the body as efficiently as it can in dry, hot weather.

The hypothalamus is the body's thermoregulatory center; it controls the body's reaction to heat. The body is designed to work within a very narrow range of temperature fluctuation. It is constantly striving to keep the core temperature as close to 98.6°F as possible. This is accomplished by the body producing sweat, which evaporates and causes the skin to cool. Subcutaneous blood vessels dilate and blood is channeled to the skin and is cooled. Problems can develop when (1) the humidity is high and sweat cannot easily evaporate; (2) temperatures are above 99°F and the body is actually being heated by the environment; or (3) water loss from sweat and respiration is not replaced and dehydration occurs. Each of these scenarios can cause problems that could result in heat related injuries.

When the body fails to regulate its internal temperature, an individual may suffer from heat cramps, heat fatigue, heat exhaustion, or heatstroke.

Heat Cramps

Heat cramps are painful muscle contractions that occur during or after work in the heat. Symptoms include cramps or spasms in the legs, arms, and stomach. To treat, stop exercising, get out of the heat, massage the cramps, and drink plenty of fluids.

Heat Fatigue

Symptoms of heat fatigue include weakness, dizziness, headache, rapid pulse, and low blood pressure. To treat, stop exercising, get out of the heat, and drink plenty of fluids.

Heat Exhaustion

Excessive loss of body water and/or electrolyte depletion causes heat exhaustion. Symptoms include profound weakness, dizziness, severe headache, mental confusion, rapid weak pulse, and temperature as high as 104°F. Treatment includes going to a cool place immediately, drinking plenty of fluids, loosening clothing, and rubbing the body with a cool, wet towel.

Heat Stroke

Heat stroke is an extreme medical emergency characterized by failure of the body's heat-regulating mechanism. Symptoms include a body temperature of 105°F, or higher, disorientation, loss of coordination, absence of sweating (though occasionally sweating may be present), a rapid, bounding pulse, vomiting, diarrhea, and unconsciousness. An individual with these symptoms should be transferred to an emergency room as soon as possible. If left untreated, heat stroke can result in heart failure.

Precautions to take while exercising outside

Observe the following checklist if you are considering exercising outdoors in the heat:

- Drink plenty of fluids before, during, and after exercising.
- Avoid drinks with caffeine and alcohol, both of which act as diuretics.
- Wear light, loose-fitting clothing.
- Acclimate yourself to hot weather by spending at least the first three days working out less intensely.
- Exercise during the coolest parts of the day—before 10:00 am or after 6:00 pm.

PSA screening offered to male participants in LSAH

All male participants in the LSAH, 45 years of age and older, will receive screening for elevated levels of PSA, a prostate specific antigen, as part of the blood work performed when they visit the clinic for their routine physical examinations. PSA screening plays a leading role today in the diagnosis and management of prostate cancer.

Prostate cancer is the most common cancer found in American males, occurring in about half of those men aged 70 years and older. It is one of the leading causes of cancer deaths for all men in the United States.

Early diagnosis, as with other cancers, is the key to successful treatment and management of the disease. Until recently, a physician's most effective means of diagnosing prostate cancer included a digital rectal examination, biopsy, and the use of available biochemical markers, which were not specific to prostate cancer.

In recent years, however, a new enzyme has been identified and found to be produced exclusively by tissue in the prostate. This antigen, called prostate specific antigen, or PSA, is the first organ-specific tumor marker to be identified in cancer biology. It is produced by all types of prostatic tissue—normal, benign prostatic hypertrophy (BPH), and malignant. PSA is not found in any other tissue obtained from men, nor is it produced by cancers of other areas. PSA is not elevated in prostate cancer patients who are in prolonged remission, nor is it elevated in healthy men, or patients with nonprostatic malignancies. This extensive evidence favors PSA as an effective aid in the diagnosis and management of prostate cancer.

However, since increased PSA is also found in men with benign conditions of the prostate, PSA is not a *definitive* diagnostic marker to screen for prostate cancer. Elevated serum concentrations of PSA have been consistently reported in patients with BPH, prostate cancer, and inflammatory conditions of related, adjacent tissue. The sensitivity and specificity of PSA screening for cancer can be improved, though, by examining the rate of increase of PSA from year to year. Consistent increases significantly improve the ability to distinguish between cancer and benign conditions.

As a management tool, serum PSA is the most reliable indicator for making a prognosis of the disease's progression, as well as monitoring response to therapy. In patients for whom surgery is a necessary measure, serum PSA is the most sensitive method available for detecting tumor recurrence on long-term follow-up.

For male participants in the LSAH, 45 and older, the advantage of consistent monitoring provides an additional incentive to schedule routine physical examinations throughout the course of the study. Routine testing for serum PSA, in conjunction with other tests, has proven an effective screening tool for new disease as well as managing existing disease.

MOVING?

NEW PHONE NUMBER?

Please let us know by calling
***(713) 212-1362* or *(713) 483-5785*, OR write us at:**

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