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Under the command of Colonel Benjamin O. Davis, these pilots fought in the aerial war over North Africa, Sicily and Europe. These Tuskegee gallant men flew 15,553 Sorties (flights of an aircraft on a combat mission) and completed 1,578 missions with the 12th Tactical and 15th USAF. The 1st U.S. Air Force’s first Black general rose to the rank of Lt. General. During WWII, 66 pilots were killed in aerial combat while another 32 were either forced down or shot down and captured to become prisoners of war. These courageous airmen came home with 150 Distinguished Flying Crosses, Legions of Merit and The Red Star of Yugoslavia.

During the war the Tuskegee Airmen faced the contradiction between fighting for democracy overseas and being denied civil rights at home. These pilots made their advances during one of the most difficult times for Blacks in our nation’s history. Many of the men remained in military service in the post-WWII era and spearheaded the integration of the armed forces in the United States with their integration into the USAF in 1949. Their hard work, common sense and devotion to America – and the idea that it stands for freedom for all – continue today.

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Visual Acuity Changes in Shuttle Astronauts

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In normal vision (20/20), the cornea and the crystalline lens work together to focus the image on the fovea (Figure 1). This image is transformed into nerve impulses which are then transmitted by the optic nerve into the brain. Blurry vision results when refractive errors cause the light rays not to be focused on the retina. For example, the anomalous curvature of the cornea can cause myopia (nearsightedness), hyperopia (farsight- edness), or astigmatism, whereas the loss of lens elasticity causes presbyopia (age-associated farsightedness).

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For your information...

The Comprehensive Medical Information System

Implementation of the Comprehensive Medical Information System (CMIS) has begun! The CMIS project will integrate medically related data from the various sources of space flight Medical Operations into a single system electronic format. The foundation of the system is an electronic medical record (EMR), a computer information system that allows for optimal storage, processing and retrieval of medical information. For example, laboratory test results are located in a ‘flowsheet’ where the physician can look at one value or several values over a defined period of time. These results can be displayed either numerically or graphically. By using an EMR, the Clinics can increase accessibility of pertinent medical data, simplify the input process, decrease paper and redundancy, and increase efficiency in locating and handling patient records.

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Aging and Blood Pressure

Decline in cardiovascular function is expected with aging in the general population. Systolic and diastolic blood pressure measurements were examined to describe the effects of aging on the cardiovascular function of the LSAH population. Astronauts and comparison participants who were selected before 1992 were included in these analyses. Blood pressures were taken while the participant was seated and were a part of routine physical examinations. Ages were divided into five-year groupings. Ages beginning with less than 30 and up to 69 years. Data for men and women are combined for these analyses. An individual is included once in each of the five-year age group for which he/she is eligible, using the first examination for the participant after he/she entered that age group. There are small numbers of participants in the age groups above 55 and the resulting statistics for the older groups may not be stable.

The mean systolic and diastolic blood pressures are shown in Figure 1. Although the means for some of the age groups are not statistically different, overall the comparison participants have higher mean blood pressures than the astronauts. These differences may be due to differences in physical activity. The lower mean blood pressures are an indicator of better cardiovascular conditioning among the astronauts than among the comparison participants as a group. The ranges of individual measurements among the two groups do, however, overlap. These values also indicate that both the astronauts and the comparison participants may have experienced some decline in cardiac function with age. The rate of decline is similar in both groups even though the mean values for the astronauts are lower than the mean values for the comparison participants.

These are crude analyses that have not been adjusted for any other variables. Exercise, weight gain, other illnesses, life style activities, and use of medications to control hypertension all make an impact on cardiac function and might have been included as confounding variables. However, the intention of this examination was to look at the simple association of age and cardiac function. The results indicate that this association is an inverse one, and that the rate of decline may be similar for a range of initial blood pressure values.

Flight Surgeon observations would be available from a centralized database.

**Mission Support**

- Required mission support data for Flight Surgeons would be tracked in a single source instead of multiple sources. Therefore, meeting the medical needs of the crew would be more efficient by having accurate and complete data available from one source and in an easily readable format.

- Mission data from preflight and mission length and changes in near vision.

- Comparisons of LSAH and comparison participants.

- Medical requirements lists, medical checklists, toxicology databases, environmental databases, Flight Surgeon’s references, and medical flight rules could be located in and transferred from an EMR. Any questions or comments with Wyle CMIS Project Team members and/or with the CMIS team at the Aerospace Medicine Board (AMB) Information needed to provide reports to AMB for waivers and board decisions would be readily available.

**Metrics Tracking Systems**

Clinical quality controls could be implemented since information could be extracted from the CMIS to follow any aspect of care delivery. Prevention flagging would allow specific patient groups to receive care as designated by wellness protocols.

**Trend Analyses**

- Disease states, safety, and occupational health issues could be monitored.

- Implementation of the EMR will begin in the Flight Medicine Clinic followed by Occupational Medicine Clinic and will include relevant medical data from the LSAH.

- Clinical personnel will be working with Wyle CMIS Project Team members Martha Thomas, Phyllis McCulley, Byron Smith, and NASA Flight Surgeon and CMIS Lead Physician Patrick McGinnis, MD, FAA and will be the copyright and successful transfer from a paper-based medical record to an EMR. Any questions or comments may be directed to the CMIS office at (281) 244-5177.
What is the Healthy Weight for You?

Now that we have recovered from our holiday indulgences, many of us will probably inventory the damage we have done to our bodies. However, how should you determine the healthy weight for you? It is not simply a matter of looking at a height-weight chart anymore (Tables 1 and 2). Although your weight for height is important, it is not the whole story. The amount of bone, muscle and fat tells much more about body composition. The distribution of fat carry you are the critical measurements.

A good indicator of how much fat you carry is the body mass index (BMI). Although not a perfect measure, your BMI will give you a fairly accurate assessment of how much of your body is composed of fat. To calculate your BMI, do the following:

• Take your weight in pounds, and divide by 2.2 to get your weight in kilograms.
• Round to the nearest kilogram; this is your weight number.

Table 1. Male Height-Weight Chart

<table>
<thead>
<tr>
<th>Height (feet/inches)</th>
<th>Small Frame (pounds)</th>
<th>Medium Frame (pounds)</th>
<th>Large Frame (pounds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5’ 2’’</td>
<td>128-134</td>
<td>131-141</td>
<td>136-150</td>
</tr>
<tr>
<td>5’ 3’’</td>
<td>130-136</td>
<td>133-145</td>
<td>140-153</td>
</tr>
<tr>
<td>5’ 4’’</td>
<td>132-138</td>
<td>135-145</td>
<td>142-156</td>
</tr>
<tr>
<td>5’ 5’’</td>
<td>134-140</td>
<td>137-148</td>
<td>144-160</td>
</tr>
<tr>
<td>5’ 6’’</td>
<td>136-142</td>
<td>139-151</td>
<td>146-164</td>
</tr>
<tr>
<td>5’ 7’’</td>
<td>138-144</td>
<td>141-154</td>
<td>149-168</td>
</tr>
<tr>
<td>5’ 8’’</td>
<td>140-148</td>
<td>143-155</td>
<td>149-168</td>
</tr>
<tr>
<td>5’ 9’’</td>
<td>142-151</td>
<td>145-159</td>
<td>152-172</td>
</tr>
<tr>
<td>5’ 10’’</td>
<td>144-154</td>
<td>147-165</td>
<td>155-176</td>
</tr>
<tr>
<td>5’ 11’’</td>
<td>146-157</td>
<td>150-163</td>
<td>158-180</td>
</tr>
<tr>
<td>6’ 0’’</td>
<td>149-160</td>
<td>154-166</td>
<td>164-184</td>
</tr>
<tr>
<td>6’ 1’’</td>
<td>151-162</td>
<td>157-170</td>
<td>164-188</td>
</tr>
<tr>
<td>6’ 2’’</td>
<td>153-164</td>
<td>160-174</td>
<td>168-192</td>
</tr>
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<td>155-168</td>
<td>164-178</td>
<td>172-197</td>
</tr>
<tr>
<td>6’ 4’’</td>
<td>157-172</td>
<td>167-182</td>
<td>176-202</td>
</tr>
<tr>
<td>6’ 5’’</td>
<td>159-176</td>
<td>171-187</td>
<td>181-207</td>
</tr>
</tbody>
</table>

Where you carry your weight also has significance for your health. The waist-to-hip ratio (WHR) is one of the most commonly used anthropometric measures to indicate a central obesity pattern and an increased risk of cardiovascular disease in normal-weight adults. It is calculated by dividing your waist circumference by your hip circumference. A healthy waist/hip ratio is 0.80 or below for women, and 0.95 or below for men. For medical research, central obesity is defined as a WHR greater than 0.80 for women and greater than 0.95 for men. A lower WHR reflects a "pear" distribution and is considered healthy.

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while a higher WHR reflects an “apple” distribution. Those who tend to put on weight above the waist – “apple” shaped people – may have a greater chance of developing high levels of “bad” cholesterol, hardening of the arteries, high blood pressure and diabetes. “Pear” shaped people carry their extra weight below the waistline, and do not seem to have as high a risk of developing the above conditions as “apples” do. A highly significant increase in risk for cardiovascular disease is based on the underlying concept that these features can be measured early in life (e.g., in early adulthood). This allows the identification of persons at higher risk of disease at a time when other risk factors, such as obesity, might not have developed. Lifestyle habits which increase risk for morbidity and mortality, such as smoking and heavy drinking, also increase the WHR.

The safest way to reach your desired weight is to modify your diet and exercise. Astronauts may obtain a fitness information and individualized exercise prescription by contacting one of the Astronaut Strength Conditioning and Rehabilitation Team members at (281) 483-7874. Other JSC employees may contact Larry Wier at (281) 483-0301 for more information on the Health Related Fitness Program. ■

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<table>
<thead>
<tr>
<th>SUBJECTIVE FINDINGS</th>
<th>PERCENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor Air Quality</td>
<td>3.3</td>
</tr>
<tr>
<td>Dry Eyes</td>
<td>5.7</td>
</tr>
<tr>
<td>Eye Strain</td>
<td>9.0</td>
</tr>
<tr>
<td>Eye Irritation</td>
<td>2.5</td>
</tr>
<tr>
<td>Other</td>
<td>3.3</td>
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