**Metabolic Profile Laboratory Project (10pt Lab due February 15)**

**Introduction**

Presently, the science of ‘sedentary behavior’ is an emerging field of research in health, fitness and medicine. Most adults spend the majority of their non-exercising waking day in some form of sedentary behavior such as riding in a car, working at a desk, working on a computer and watching television (Owen et al., 2009; Katzmarzyk et al., 2009). Men and women can sit for many hours at a time, day after day. In fact, as noted in the example in Figure 1, of the 16 hours of waking time in a day (24 hours minus 8 hours of sleep), approximately 70% of the waking day (of this physically active person) appears be in sitting behaviors.



**Figure 1. Waking Day Metabolic Profile**

Adapted from Hamilton et al., 2009.

**What are the Physiological Mechanisms to Sedentary Behavior?**

 The preponderance of investigations on the physiology of sedentary behavior have been completed with animal models. Hamilton et al. (2008) explain that when rats are not allowed to move, there is a very dramatic drop in the enzyme lipoprotein lipase in the leg muscles. This enzyme captures triglycerides out of the blood to be used by the body for fuel. Thus, with consistent sitting, blood triglyceride levels start to soar higher, elevating the risk for cardiovascular disease (CVD). This same physiological phenomenon is what is hypothesized to happen in humans. Hamilton and colleagues note there is also a relevant decrease in the HDL cholesterol (the good type). Therefore, the research shows that sedentary behavior appears to have a significant effect on some the main contributing factors of CVD.

**Metabolic Profiling Worksheet #1 Your Name:**

**Practical Application 1*)*** One technique for allied professionals to work with patients and clients is to develop a ‘waking day metabolic profile’ as seen in Figure 1. This ‘waking day metabolic profile’ will serve as an awareness index for each person to realize how much sitting he/she is doing on a daily basis.

**Practical Application 2)** Hamilton and colleagues continue that the next step is to determine ways to sit less and stand more throughout the day, particularly during sustained periods of sitting. This brings forth the concept of incorporating frequent episodes of spontaneous physical activity throughout sustained sitting times of a person’s ‘metabolic profile.’ James Levine, M.D., Ph.D. has pioneered the most notable spontaneous physical activity research. Levine encourages all individuals to add more spontaneous movement to their daily life

**Laboratory Assignment to Complete and Turn In: PLEASE TYPE ON Worksheet #2 and #3s**

1) TYPE YOUR Name on Metabolic Worksheets #1 and #2

2) Choose one day that represents a common waking day of activities for you

3) Complete a metabolic profile on yourself using the Metabolic Profile Worksheet #2; capture blocks of time in 30min, 45min or hourly

4) Do the calculations on the bottom of the metabolic profile

5) INTERVENTIONS: COME UP WITH 10 WAYS YOU CAN ADD MORE MOVEMENT TO YOUR WAKING DAY AND WRITE THESE OUT BELOW (Movement ideas and/or easy exercises)

6) EMAIL your completed Metabolic Profile lab on due date

***Some examples interventions to consider include:***

1) Stand up and walk around every 30 minutes while studying at home

2) Stand up and move every time you drink some water

3) Walk briskly to the farthest bathroom in a worksite facility when going to the restroom (if available)

4) Stand and do partial squats when talking on the telephone

﻿**YOUR INTERVENTIONS**

1.

2.

3.

4.

5.

6.

7.

8.

9

10.

**Metabolic Profile Worksheet #2 Your Name:**

Day(s) of Week:

|  |  |  |  |
| --- | --- | --- | --- |
| **Time of Day** | **Activity** | **Minutes Sitting** | **Minutes Standing or Moving** |
| **Wake-Up:** |  |  |  |
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| **Total Time (Min) Awake=** | **Total Time (Minutes) Sitting=****Total Time (Min) Standing/Moving=** |  |  |

**Calculate % Day Sitting:\_\_\_\_\_\_\_\_\_\_** Total Time (Minutes) Sitting divided by Total Time (Min) awake

Example Calculation: 500 Min (sitting) divided by 900 Min (awake) = 500/900 = .55 or 55%