

The Southern Adventist University *Health & Performance Lab*[®] is committed to helping students, faculty, SAU alumni, community members and athletes to reach their optimal health and performance potential. We believe we are hand-made by God with His design imprinted on our DNA. By following His physiological laws we can reach beyond any imagined expectations with results that translate to better health and human performance.

The *Metabolic Efficiency Testing*[®] outlined below addresses the personal needs of any individual from the novice to the most experienced and seasoned athlete. If you want to know where you stand physically and how to progress from baseline to improved health and performance, simply choose an assessment package that fits you and call or schedule an appointment online at Southern Adventist University *Health & Performance Lab*[®].

Resting Metabolic Rate (RMR)

Resting metabolic rate is used for determination of calorie needs during rest. With a RMR evaluation calorie needs can be defined for a normal 24-hour period. In conjunction with a goal of a set level of exercise your calorie needs for weight loss, gain, or maintenance can be regulated for optimal results.

Estimated time commitment: 30 minutes

Maximal Oxygen Consumption (VO₂max)

Aerobic capacity is determined by the maximal amount of oxygen the human body is able to utilize per minute of physical activity at the cellular level. Because all tissues and organs in the body need oxygen to function, higher oxygen consumption indicates a more efficient cardiorespiratory system. VO₂ max testing can be performed on a treadmill, laboratory bike (your personal bike), or rowing machine.

Estimated time commitment: 60 minutes

Lactate Threshold/Training Zone Determination

Utilizing analysis of your blood and fuel utilization (carbs and fat) during the test we will determine optimal heart rates for the type of training that best suits your training goals. Training for different types of events demands strengthening specific energy systems. Knowledge of these systems and how to stress them for optimal performance is discussed (Lactate data collected during VO₂ max test).

Estimated time commitment: 60 minutes

Health Fitness Package

The Health Fitness package is intended for individuals just getting into a fitness, lifestyle or simply interested in overall health program. We perform a sub-maximal test for estimation VO_2max , training zone calculation, body composition analysis via skin-fold measurements, flexibility, muscular strength and endurance testing & nutrition counseling

Estimated time commitment: 60 minutes

Endurance Sport Package

The endurance package is intended for individuals that are looking for details of their cardiovascular fitness. The testing provides a tool for training, racing, and overall fitness. We measure cardiovascular fitness directly with a metabolic analyzer (VO_2max), lactate threshold/training zone determination directly via blood analysis, substrate utilization (calories of fat and carbohydrate at each intensity), body composition analysis via hydrostatic weighing assessment. The focus of endurance testing is cardiovascular fitness, training, and/or racing.

Estimated time commitment: 2 separate 60 minute times

Triathlete Package (additional analysis for endurance testing)

The triathlete testing package is excellent for the serious athlete interested in triathlons. Along with metabolic testing, this package has an additional option of analyzing running, cycling and swimming. The package is designed to determine training and racing values for each event with availability to advance training progression throughout the racing season.

Estimated time commitment: 2 separate 60 minute times

Energy Balance Calorie intake/output Package

Includes everything you need to monitor calorie intake and output: resting metabolic rate and calorie use during rest and exercise are evaluated. Body composition also measured with recommendations toward energy balance. This assessment is particularly important to the individual who want to learn to control or lose weight. Additionally, this package is important to the athlete who has daily intense training and needs to know caloric energy balance.

Estimated time commitment: 90 minutes

Cycling Performance Package

Endurance cycling performance is of particular interest to the lab because of the variety of cycling events within the cycling community. Analysis of VO_2max capacity, power to watt ratio and lactic acid threshold help the cyclist to determine training and racing paces.

Estimated time commitment: 60 minutes

Hydrostatic Body Composition (% body fat – Gold standard measurement)

Hydrostatic weighing is a method of measuring percent body fat. Currently it is considered the "gold standard" of body composition assessment.

Hydrostatic weighing consists of measuring ones underwater weight while submerged and after expelling all the air from the lungs. Because you have to be underwater and blow all of your air out it is important that the individual be comfortable underwater.

To predict % body fat composition, underwater weight is calculated from underwater temperature, room temperature, barometric pressure and humidity. The residual lung volume test is performed prior to the underwater weight to account for air left in the lungs and may be performed on a separate testing day.

Estimated time commitment: 45 minutes
or 2 separate 30 minute testing times

Muscular Strength

Muscular strength refers to the maximal force that can be generated by a specific muscle or group of muscles. Testing the various muscle groups strengths and weaknesses allows one to perform specific muscle group training for improvement.

Estimated time commitment: 30 minutes

Muscular Endurance

Muscular endurance is the ability of a muscle group to perform repeated contractions during a given period of time. Testing for endurance allows one to gauge and train for endurance in particular events

Estimated time commitment: 30 minutes

Flexibility

Flexibility is the maximum ability to move a joint & muscles through a range of motion. It depends on a number of specific variables including genetics, physical activity, muscle temperature, body fat and muscle typing. Additionally, compliance of various tissues such as ligaments and tendons affects the range of motion. Testing with recommendations helps one feel better with improved range of motion and is designed for sport specific stretching.

Estimated time commitment: 30 minutes

Health Fitness & Performance Testing Packages

Health Fitness Package: \$175.00

The test includes:

Estimated time commitment: 60 minutes

- Resting Metabolic Rate
 - Sub-maximal Lab or field test for measurement of aerobic fitness
 - Body composition analysis (% body fat) via skin-fold caliper assessment
 - Flexibility and range of motion analysis
 - Muscular strength and endurance testing
 - Blood pressure
 - Results & heart rate training zone progression consultation
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Energy Balance Package: \$150.00

The test includes:

Estimated time commitment: 90 minutes

- Resting Metabolic Rate
 - Threshold calorie use during exercise at a variety of heart rates
 - Body composition analysis (% body fat) via hydrostatic weighing
 - Body composition analysis also includes Residual Lung Volume (RV) test
 - Intake dietary & nutritional recommendations
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Endurance Testing Package: \$225.00 / \$175.00 (professional discount)

The test includes (treadmill or bike):

Estimated time commitment: 2 separate 60 minute times

- Maximal Oxygen Consumption (VO₂max) measured baseline & during to analyze training progression
 - Lactate Threshold/Training zone determined utilizing blood samples
 - Power and/or Pace training zones determination
 - Substrate utilization (Calories of fat and carbohydrate at different intensities)
 - Body composition analysis (% body fat) via skin-fold caliper assessment
 - Results & training progression consultation
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Triathlete Package: \$325.00 / \$275.00 (professional discount)

The test includes:

Estimated time commitment: 2 separate 60 minute times

- Three maximal metabolic VO2max tests... running & cycling & rowing (protocol for swimming analysis)
 - Perform watt to work ratios on bike
 - Lactate thresholds with predicted paces for running & cycling & swimming
 - Body composition analysis (% body fat) via skin-fold caliper assessment
 - Plus above endurance package designed for specific interest
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Cycling Performance Package \$150.00

- Analysis of VO2 max capacity
 - Power to watt ratio
 - Lactic acid threshold
 - Recommendation for training and racing paces.
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Wellness @ Work® Ambassador Package: \$150.00

The Ambassador **Wellness @ Work®** Package entitles employee groups to obtain lab assessment(s) at group rates. In return each Ambassador will share their experience via social media with colleagues and friends to encourage other's participation in the **Wellness @ Work® Ambassador** Program. The intention of the program is to provide companies and employers with risk lowering disease prevention healthy lifestyle strategies.

The Lab assessment

Estimated time commitment: 90 minutes

(Includes but is not limited to...)

- Resting Metabolic Rate
- Threshold calorie use during exercise at a key training heart rates
- Substrate utilization (*Calorie expenditure from fat and carbohydrate*)
- Body composition analysis (% body fat) by bio impedance or skin-fold calipers method
- Intake dietary and nutritional recommendations

Ala Carte Single Assessment Testing

- Body Composition via skin-fold measurement: \$35.00 or 3 tests for \$95.00 / 20 min.
- Hydrostatic Weight: \$95.00 (includes Residual Lung Volume test) / 45 minutes
- Resting Metabolic Rate: \$75.00 / 30 minutes

Research Participant Opportunity

The Human performance lab is committed to ongoing research in the area of metabolic efficiency. If you are interested in becoming a research participant and to determine eligibility, please contact Dr. Harold Mayer.

Established Data profile

Note... to validate training progression, all follow-up testing is at a 50% discounted rate.

Southern Adventist University
Hulsey Wellness Center
Human Performance Lab

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To make an appointment call or sign-up online,
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Metabolic Efficiency Testing[®] January 2015
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