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# PUSHIN' ON

## Headline News

**November 15, 2012** - The UAB Spinal Cord Injury Model System (UAB-SCIMS) website ([www.uab.edu/sci](http://www.uab.edu/sci)) is redesigned. The website is the primary source for dissemination of information. It is designed to be the starting point for anyone who is searching for information. It contains all materials produced by the UAB-SCIMS as well as links to other SCI Model System Centers, SCI organizations and associations, and various educational institution web sites providing information related to SCI. There is an easier navigation with banner topics and sidebars to quickly find the information you want.

### Banner Topics

- Newly Injured
- Daily Living
- Consumer Groups
- Professional Groups
- Research
- Information in Spanish

**October 30, 2012** - Advanced exoskeleton promises more independence for people with paraplegia. A team of engineers at Vanderbilt University's Center for Intelligent Mechatronics has developed a powered exoskeleton that enables people with severe spinal cord injuries to stand, walk, sit and climb stairs. Its light weight, compact size and modular design promise to provide users with an unprecedented degree of independence.

The university has several patents pending on the design and Parker Hannifin Corporation – a global leader in motion and control technologies – has signed an exclusive licensing agreement to develop a commercial version of the device, which it plans on introducing in 2014.

**SOURCE:** <http://news.vanderbilt.edu/2012/10/exoskeleton/>

**July 31, 2012** — The Miami Project to Cure Paralysis, a Center of Excellence at the University of Miami Miller School of Medicine, has received permission from the Food and Drug Administration to begin a revolutionary Phase 1 clinical trial to evaluate the safety of transplanting human Schwann cells to treat patients with recent spinal cord injuries.

The clinical trial will enroll eight participants with an acute thoracic SCI. Newly injured patients brought to the trauma center would have to meet the stringent criteria and agree to participate in further screening within five days of their injury. At that point, the participant will undergo a biopsy of a sensory nerve in one leg to obtain his or her own Schwann cells. The Schwann cells will then be grown in a culturing facility for three to five weeks to generate the number of cells necessary for transplantation, and to undergo the strict purification process. By the time the Schwann cells are surgically transplanted into the injury site, participants will be 26-40 days post-injury.

**SOURCE:** <http://www.miamiproject.miami.edu/announcement>

## Participate in SCI Related Research

**The Effects of Virtual Walking on Pain in Spinal Cord Injury Patients** - The University of Alabama at Birmingham Spinal Cord Injury Model System (UAB-SCIMS) seeks participants with spinal cord injury who live in Alabama, are over 18 years old, and have SCI related pain at or below the injury level. \$25 Visa gift cards for each of test days. For information, contact Juliette Galindo at 205-934-3345 or [jgalindo@uab.edu](mailto:jgalindo@uab.edu).

Go to [www.uab.edu/sci](http://www.uab.edu/sci) and search the "Research" tab to find more opportunities to participate in research.

# HEALTHY LIVING



## Weight Management and Spinal Cord Injury: Understanding Obesity

by Ceren Yarar, PhD

Most people with spinal cord injury (SCI) know they have unique health concerns. They also know it is important to have answers to questions about preventing or managing health problems.

Weight gain is a serious health concern. The problem is that most people with SCI do not know the facts about obesity. They need questions answered!

### *How do I gain weight?*

Everyone's weight is largely dependent on body metabolism. Simply put, your metabolism is the way your body converts the food you eat into the energy your body burns to function. You gain weight if you eat more calories than you burn. You lose weight if you eat fewer calories than you burn.

Most people with spinal cord injury (SCI) are not as active after injury as they were before injury. This inactivity is largely due to limited mobility, so people with higher levels of injury tend to be less active than people with lower levels of injury. People who are less active need fewer calories to function. People gain weight when they do not lower their calorie intake to match their lower calorie needs or increase their activity level to burn more calories. If these adjustments are not made, people become overweight and obese as they lose muscle and develop excess fat.

### *Am I overweight or obese?*

The Body Mass Index (BMI) is commonly used to measure body fat. If you search the Internet for "BMI calculator," you can find free online programs that provide your BMI using your height and weight. You can calculate your BMI using a formula (right) if you do not have Internet access. A BMI score between 20 and 25 is a healthy range. A score between 25 and 30 is in

the overweight range. Scores 30 and above are in the obese range.

Your BMI score is a basic indicator of health. Being overweight usually means that you have more body fat than you need for the best overall health. Being obese usually means you have an unhealthy amount of excess body fat.

### *How common is obesity in the SCI population?*

There is currently no clear-cut estimate on how common obesity is in the SCI population. If you look at research that uses the BMI, results suggests that more than half of the SCI population is obese. However, the BMI may not be an accurate measure for people with SCI.

### *How might BMI be inaccurate?*

A pound of muscle is smaller than a pound of fat, so muscle takes up less space in the body. This means two people can weigh the same, but the person with more muscle is going to be slimmer.

BMI does not distinguish between muscle weight and fat weight, but research suggests this is an important difference when measuring body fat on people with SCI. On one hand, research using BMI suggests more

### Formula for **BMI**

$$\frac{\text{Weight in Pounds}}{(\text{Height in Inches} \times \text{Height in Inches})} \times 703 = \text{BMI}$$

Example: Person 5' 6" tall weighing 205 pounds

$$\frac{205 \text{ Weight in Pounds}}{(66 \text{ Inches} \times 66 \text{ Inches} = 4356)} = .047$$

$$.047 \times 703 = 33$$

Person 5' 6" tall weighing 205 pounds = **BMI of 33**

people with paraplegia are obese when compared to people with tetraplegia. On the other hand, research that looks specifically at fat shows more people with tetraplegia have an unhealthy amount of excess body fat when compared to people with paraplegia. This suggests people with paraplegia usually have more of the heavier muscle mass, and people with tetraplegia usually have more fat.

#### *How do I know if I am obese?*

A Four Compartment Model seems to be the most reliable way to identify obesity. This test measures total body fat, mineral, water and protein to determine if a person is obese. However, most people do not have access to this method of testing.

Waist size is probably the best measure of obesity for people with SCI. People who are obese usually have fat around the waist. This type of fat is linked to greater obesity-related health problems. This is true even if BMI falls within the normal range. You can measure your waist size by placing a measuring tape around your abdomen (place the tape at your upper hipbone and measure horizontal). The risk for obese-related health problems is higher for people with a waist size greater than 40 inches for men and 35 inches for women.

#### *How does obesity affect my health?*

The Center for Disease Control and Prevention (CDC) collects research results on obesity in the general population. The CDC reports that obesity is associated with a higher risk for a broad range of health problems.

- Coronary Heart Disease
- Type 2 Diabetes
- High Blood Pressure
- High Cholesterol
- Gallbladder Disease
- Liver Disease
- Stroke
- Reproductive Health Issues
- Obstructive Sleep Apnea
- Cancers

Not only do people with SCI have the same higher risk for health concerns associated with obesity as people

in the general population, but they also have a higher risk for additional medical conditions.

- Pressure Ulcers
- Urinary Tract Infections
- Pain
- Spasticity
- Pulmonary Embolism
- Deep Vein Thrombosis
- \*Carpal Tunnel Syndrome  
(\*Observed in people who are obese and push a manual wheelchair)

Additionally, excess weight often limits physical mobility, so people with SCI who are obese are less likely to participate in community activities. Social inactivity can negatively affect physical and psychosocial well-being along with quality of life.

#### *What can I do to improve my health?*

The goal is to reduce obesity while maintaining or increasing lean mass. Diet alone may result in a reduction in calorie intake, but there may be a loss in muscle mass. Physical activity alone may improve muscle mass, but the physical activity may not be enough to burn more calories to counterbalance caloric intake. Therefore, the combination of diet and physical activity appears to be the answer for people with SCI.

Diet and physical activity will be discussed in the upcoming issues of ***PUSH-IN' ON***.

#### Author Bio:



Ceren Yayar has a BS in Physical Therapy and a PhD in Neuromechanics. She is currently a post-doctoral fellow at University of Alabama at Birmingham Nutrition and Obesity Research Center. Her research interest is to optimize exercise and nutrition strategies for metabolic and cardiovascular disease prevention in individuals with spinal cord injury.

#### Note:

The facts stated in this article are taken from multiple research studies with research results published in multiple scientific journals. For references, please contact the editor (see next page for contact information).

Many people need a wheelchair accessible van. If you have one, you know they make them by taking a factory built van, chopping it up, adding modifications, and reassembling it.

The Vehicle Production Group (VPG) has another option for you to consider. The MV-1



is built from the ground up for wheelchair users. The passenger seat is removed, so users can ride shotgun in a wheelchair or transfer into the captain's chair to drive. It offers an in-floor ramp with a deployment length of 52.5 and 87 inches. The MV-1 allows for easy entry with an extra wide 36" x 56" access door that exceeds ADA guidelines.

There is a "Green" option for those who want an environmentally friendly vehicle. The MV-1 is the only vehicle in its class with factory-engineered and installed Compressed Natural Gas (CNS) system option. CNS may save 40% to 60% in fuel costs without compromising range, performance, or comfort.

VPG also offers a unique "White Glove" service for buyers. This personalized service includes:

- bringing the car to you if you cannot make it to the dealer for a test drive;
- coming to you for vehicle training when you purchase a new vehicle; and
- providing a 24/7 Roadside Assistance Program anywhere in the United States and Canada.

**SOURCE:** <http://www.vpgautos.com>

# TECHNOLOGY

W A T C H

A car or van is fine for some people, but what if you want a pickup truck? Mobility SVM (formerly known as GoShichi) has the answer for you!

Mobility SVM equips a full size truck with a slide-out door design and built-in wheelchair lift. This unique platform lift is rated to handle up to 750 pounds and can be placed on either side of the truck. This makes the truck accessible for either passengers or drivers to ride from their wheelchair. Plus, there is room for up to 5 family or friends.

Currently, Mobility SVM will convert the Chevrolet Silverado and GMC Sierra 1500 and 2500 models - 4x4 and 2x4; Crew or Extended Cabs.

Mobility SVM also supports our Veteran Heroes by participating in the Department of Veteran Affairs Grant program for wheelchair accessible vehicles.

Veterans can receive \$500 off toward the purchase of a Mobility SVM wheelchair accessible truck.

**SOURCE:** <http://www.mobilitysvm.com/>



The University of Alabama at Birmingham Spinal Cord Injury Model System (UAB-SCIMS) provides Pushin' On twice annually as an informational resource for people with spinal cord injury (SCI). Pushin' On is available to subscribers via email and to everyone via the UAB-SCIMS website at [www.uab.edu/sci](http://www.uab.edu/sci). UAB-SCIMS Program Director: Amie B McLain, MD. Editor: Phil Klebine, MA

1720 2nd Avenue South - 529 | Birmingham, AL 35294-7330

Phone: 205-934-3283 | TDD 205-934-4642 | Fax: 205-975-4691 | Email: [sciweb@uab.edu](mailto:sciweb@uab.edu)

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[WWW.UAB.EDU/SCI](http://WWW.UAB.EDU/SCI)