The Impact of Food and Weight on Health of Persons with SCI

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Spinalis®

Praktikertjänst
REHAB STATION

Spinalis SCI Unit at Rehab Station Stockholm

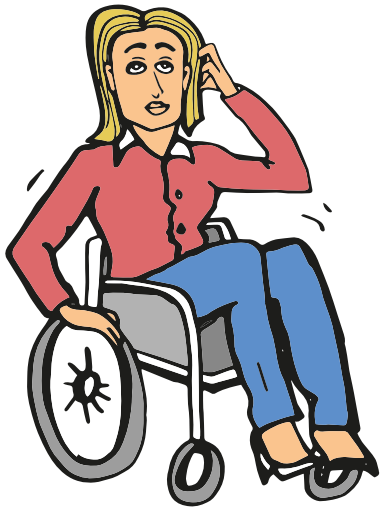
Rehab Station Stockholm
- Health Coach

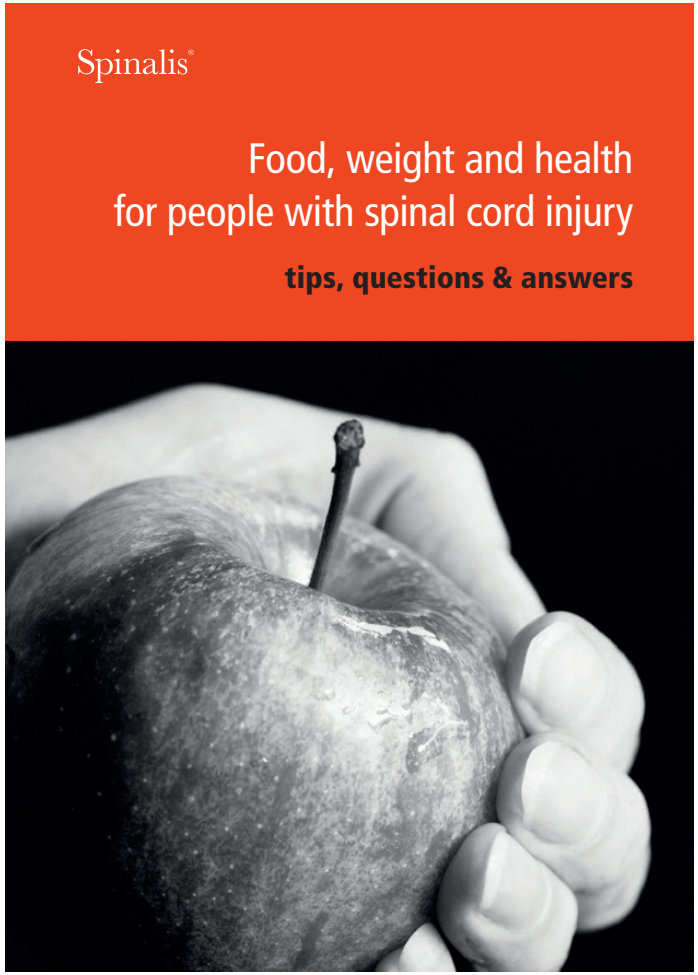
Spinalis Foundation
- Project driven development on
  Health Promotion in SCI Rehabilitation
- Ryggmärgsskada.se – a website

In cooperation with:
- RG Active Rehabilitation
- Ryggmärgsskadecentrum

This lecture:

- Good dietary habits in general
- How dietary habits interferes with:
  - Overall health
  - SCI related problems and specific demands
- Need of lessened calorie intake
- Need of optimal nutrition
- Motivational strategies
- Small break
- Time for questions





”Food, weight and health for people with spinal cord injury - tips, questions & answers”

-An educational teaching aid, at an easy-to-read level, on nutrition.
-Fact-based content, illustrations, quotes, tips

Free to translate to other languages!

Download for FREE at www.spinalis.se

NutriNord_SCI ™
A Nordic initiative on nutrition for people with spinal cord injury

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Background:
Lifestyle coaching in spinal cord injury rehabilitation – aim

- Improve or maintain general health, function and fitness
- Increase well-being
- Prevent or delay onset of secondary complications

Lifestyle

Health/risk behaviours

- Physical activity/inactivity
- Diet/nutrition
- Weight
- Smoking
- Alcohol
- Stress
- Sleeping
- Drugs

Lifestyle

Health/risk behaviours → *Lifestyle related diseases*

- Physical activity/inactivity
- Diet/nutrition
- Weight
- Smoking
- Alcohol
- Stress
- Sleeping
- Drugs

- Overweight/obesity/underweight
- High blood pressure
- Diabetes
- History on CVD
- Cancer

Correlation to secondary complications – thus preventable!

Health/risk behaviours → *Secondary complications*

- Physical activity/inactivity
- Diet/nutrition
- Weight
- Smoking
- Alcohol
- Stress
- Sleeping
- Drugs

- Pressure ulcers
- Urological complications
- Bowel problems
- Musculosceletal complications
- Pain
- Respiratory complications
- Fractures
- Overweight and obesity

"What is good for all people is even more important for those who must live with the extra burden of neurological injury or disease."

Richard Levi, MD, PhD. Professor, Linköping University

Health/risk behaviours → *Secondary complications*

- Physical activity/inactivity
- Diet/nutrition
- Weight
- Smoking
- Alcohol
- Stress
- Sleeping
- Drugs

- Pressure ulcers
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- Pain
- Respiratory complications
- Fractures
- Overweight and obesity

Spinalis Health Navigator

- a health and wellness program that bridges disability management with general health habits and lifestyle

Spinalis
Hälsonavigator®

- Tools to facilitate coaching
- Methods and programs
- Integrated in clinic
- Education of health professionals

Spinalis Health Navigator

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Spinalis Hälsonavigator®

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Three main objectives:

1. Systemized patient education and health information
2. Nutrition, weight management/overweight prevention and treatment
3. A new way of performing long term follow ups

Livsstilsboken –
vägen till ett friskare och lättare liv för dig med rörelsehinder

- Leva hälsosamt med rörelsehinder
- Lyckas med livsstilsförändringar
- Fakta/konkreta program/praktiska tips

  - Hälsotips
  - Motivation och livsstilsförändring
  - Mat och vikt
  - Motion och träning, yoga
  - Mindfulness och tanketräning

Gratis nedladdningsbar som pdf www.spinalis.se
Finns som e-bok
Anna-Carin Lagerström och Kerstin Wahman

Tillkommit i projektet: Livskompetens, att åldras med funktionshinder.
Ett Spinalisprojekt sponsrat av Allmänna Arvsfonden
Produktionsstöd från Humana Assistans AB

“The art of healthy living with physical impairments”

- Your comprehensive lifestyle guide to health and wellness

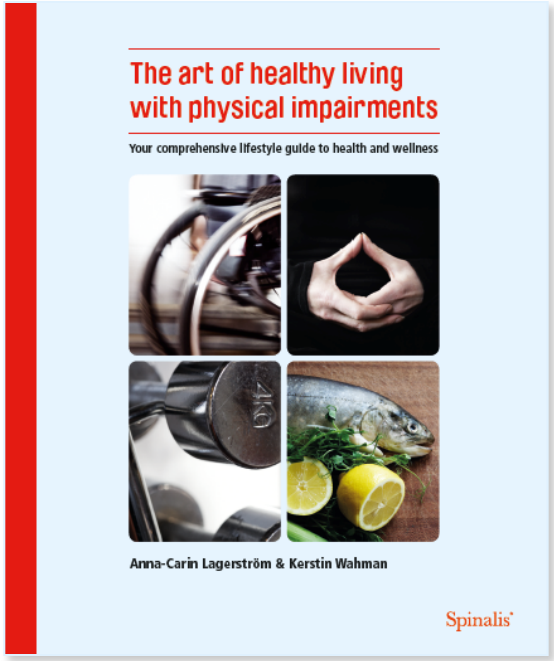
Chapters:

- 10 best tips for good health
- Motivation and lifestyle change
- Food and weight
- Physical activity and exercise
- Mindfulness and thought-training

Download for FREE at www.spinalis.se

Available as e-book!

Anna-Carin Lagerström and Kerstin Wahman,
Spinalis Foundation, www.spinalis.se



Message:
”Keep an eye on your weight
- for greater mobility and well-being!”

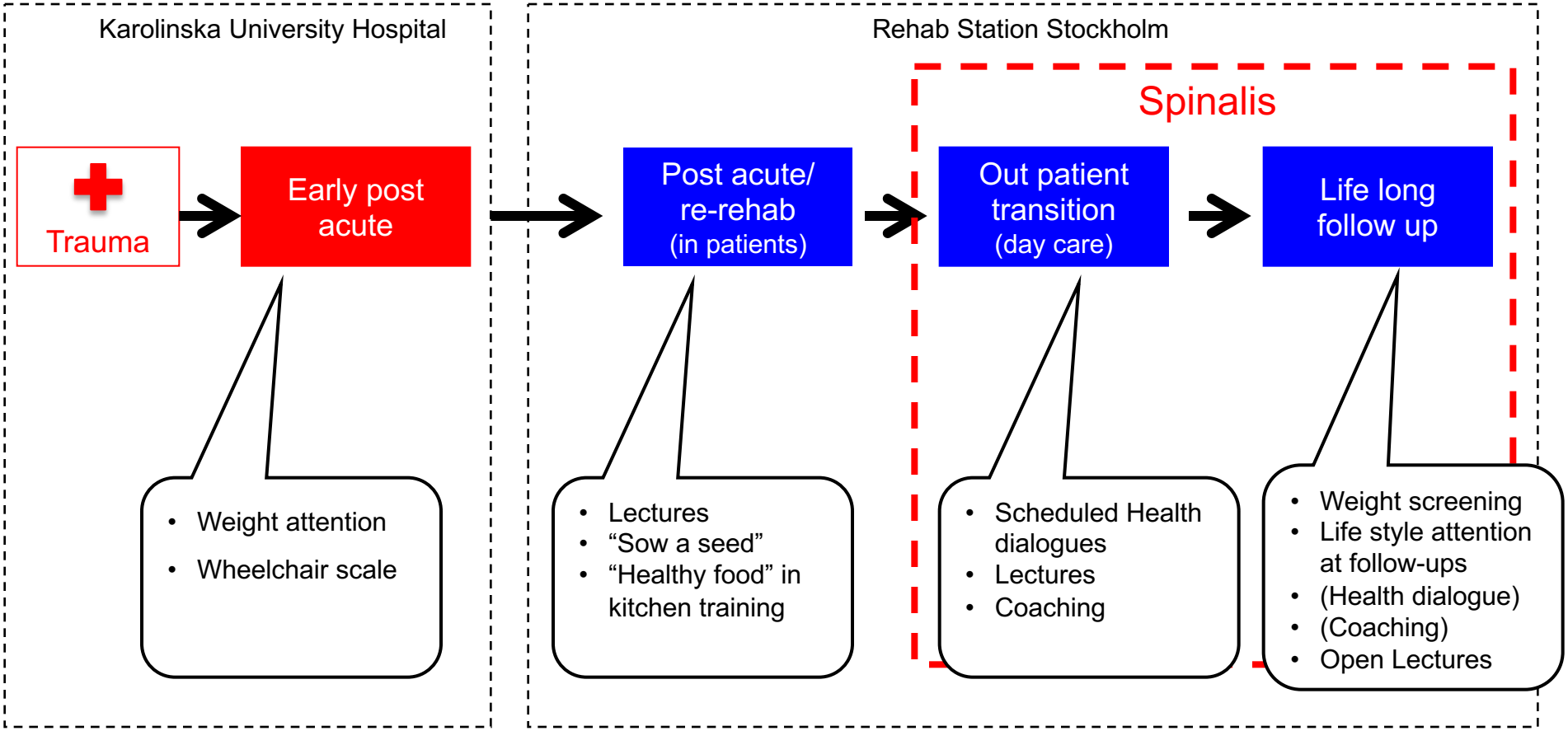
WEIGHT STATION

Weigh yourself regularly. You will discover any trends and it will be easier to adjust your energy intake.

Make notes to follow trends.

300 kilograms

Weight management for persons with SCI
- a model



NHR´s Magazine **Reflex**

Articles - Health and wellbeing

www.spinalis.se/hälsa och livsstil

Det finns en övertro på att man ska kunna gå ned i vikt bara man rör sig. Det är tyvärr en missuppfattning. Det viktigaste om man vill gå ned i vikt är att äta mindre och få i sig mindre energi.

Konsten att gå ned 36 kilo

En som lyckats gå ned ordentligt i vikt är Lennart Grånemo.

–Jag känner mig starkare och gladare, har aldrig varit så pigg som jag är nu. Egentligen har jag nog inte fattat att jag har lyckats med det här, berättar Lennart Grånemo när han ska beskriva hur han har burit sig åt för att gå ned så mycket i vikt. Nämligen 36 kilo på drygt två år.

Lennart Grånemo har i dag fått sin nya rullstol. Den är nätt och smidig till skillnad från den stora, tunga som han behövde tidigare. Strax efter vårt möte ska han fotograferas för *Expressen* som också vill skriva om hur Lennart Grånemo har lyckats.

14 december 2007 är dagen då det hände. Lennart Grånemo var på den medicinska årliga uppföljningen på Spinalisskliniken och träffade förutom sin rehabdoktor även sjukgymnasten och hälsocoachen Kerstin Wahman, kollega till undertecknad.

I samband med mötet gjordes en noggrann vägning och därefter följde en diskussion med utgångspunkt i hur han besvarat frågorna om livsstil och hälsa i det frågeformulär från Spinalis hälsonavigator som skickats hem inför mötet.

Vägningen visade att Lennart Grånemo vägde 100 kilo, vilket för en 170 centimeter lång person innebär ett BMI på 34,5, det vill säga på gränsen till svår fetma enligt definition.

Hälsocoachen menade att Lennart Grånemo borde minska sin vikt, allra helst till cirka 65 kilo. Riktlinjen var att äta cirka 1 300 kilokalorier per dag.

Anna-Carin Lagerström
Sjukgymnast och hälsopedagog

Lennart Grånemo är 57 år och arbetar till 75 procent med skadereglering på ett försäkringsbolag i Stockholm. Han skadade sig i en mopedolycka som 16-åring och är helt förlamad i benen och delar av bålen.

Han har alltid varit noggrann med sin träning. Sedan flera år tillbaka cyklar Lennart Grånemo på en armcykel hemma två gånger per dag. Totalt blir det mellan en och en halv och två timmar. De flesta dagar startar han med ett cykelpass på 40–50 minuter och tittar samtidigt på morgon-tv. Nästa pass blir på kvällen efter arbetet. Han armtränar alltså mycket, men är också en matglad person. Under åren har han sakta men säkert ökat i vikt. Han har varit olycklig över den ökande vikten och försökt olika viktminskningsmetoder men misslyckats.

Ett stort intresse är att resa och Lennart Grånemo försöker tillbringa någon tid varje år på Teneriffa. Det har med tiden blivit svårare och svårare att rent fysiskt klara resandet och han har upplevt det som jobbigt att behöva utsätta andra för den stora tyngden när han ska lyftas in i planet och i flygplansfåtöljen. Dessutom har fetman lett till rent medicinska problem med högt blodtryck.

Det var i samtal med hälsocoachen som insikten kom att det inte går att

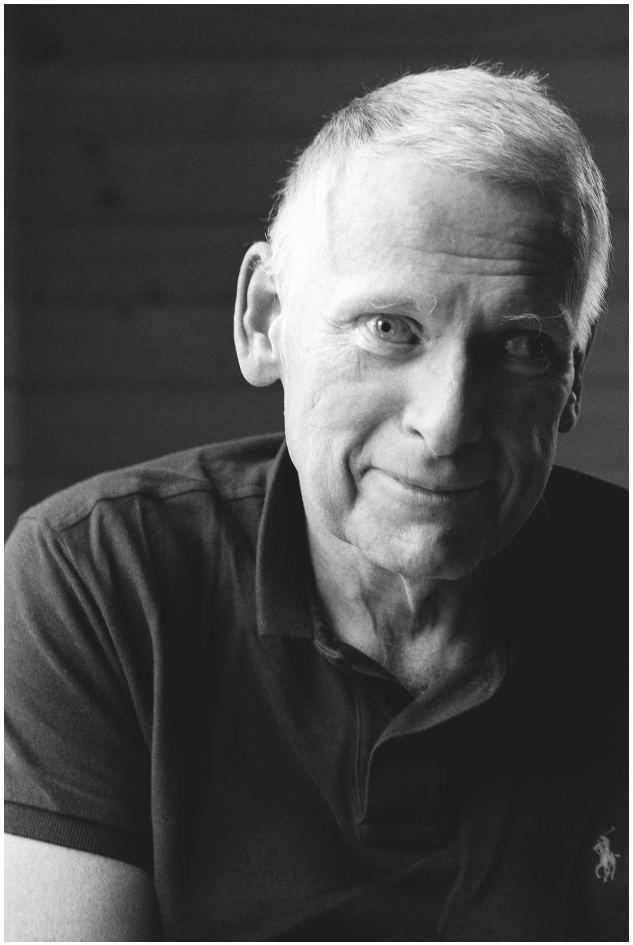
Då: 100 kilo. Lennart Grånemo år 2007.

"I stället för att sitta hemma, äta godis och titta på tv så gör jag saker. Jag har det roligare."

träna bort alla extrakilon. Det krävs en mer omfattande förändring av livsstil. Tidigare var han "extra-allt-kille" med extra pommes frites och extra bearnaisesås. När han lade om kosten började kilona rasa. Redan efter en månad hade fyra kilo försvunnit. Sedan gick det lite långsammare med ungefär ett kilo per månad.

Prerequistes

- Structured health dialogue
- Information based on facts
- "Took her time to measure weight and to explain":
  - Lessened energy consumption
  - What would be a healthy weight
  - How much/little food



Lennart 64, paraplegia since 44 years

Quality of life

- Increased mobility
- Increased autonomy
- Happier
- “Haven't been feeling so good in ages!”
- Healthier
  - No further need for hypertension drugs

Lennart's recipe: 'This is what worked for me!'

- Count calories. "I tried to keep myself between 900–1,300 calories per day."
- Keep a food diary.
- Take small portions.
- Eliminate most things that contain sugar.
- Drink water with your meals.
- Eat regular meals.
- Weigh yourself at least once per month.
- Try to find fun things to do instead of sitting at home feeling sorry for yourself and snacking on candy and chips/crisps while watching TV.

Why are specific guidelines for persons with mobility problems needed? What is it that makes the difference?

Basic conditions:

- Reduced energy consumption
- The same nutritional needs, but less energy (caloric) needs
- Concept: "Less, but better"

Good nutrition is essential to good health – mental and physical!

- Vegetables and legumes (dark green, red and orange, beans and peas)
- Fruit
- Protein (lean meat/poultry, fish, egg, unsalted nuts and seeds)
- Whole grain products
- Healthy fats: vegetable oil (olive/canola/sunflower), nuts, avocado, fatty fish, eggs
- Fermented foods – high in good bacteria: yogurt sauerkraut, miso, and pickled vegetables

Healthy food is especially important for persons with SCI:

…helps prevent, and treat, common conditions:

- Skin breakdown – poor wound healing
- Infections – due to impaired immune function
- Fatigue problems
- Bowel problems
- Long term antibiotic treatment
- Osteoporosis
- Long-term pain problems
- Cardiovascular disease

Healthy food is especially important for persons with SCI:

Message: ”Eat less …. and healthier!”

…helps prevent, and treat, common conditions:

- Skin breakdown – poor wound healing
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- Cardiovascular disease

Non healthy food

- (modern "Western" diet with highly processed food)
- low nutrient density and high energy density

"Fast" carbohydrates:

- All foods that contain refined grains/flour: millet, maize, sorghum, wheat
- Sugar
- White rice

Non healthy food

- (modern "Western" diet with highly processed food)
- low nutrient density and high energy density

"Fast" carbohydrates:

- All foods that contain refined grains/flour: millet, maize, sorghum, wheat
- Sugar
- White rice

Why fast carbs are a problem?

- Raises the blood sugar level
- Activates insulin, a fat storing hormone

Overweight and obesity, a major public health issue - all over the world

- Mexico 75 % - overweight/obese
- US 71 % - overweight/obese
- England 65 % - overweight /obese
- Finland 58 % - overweight/obese
- Canada 54 % - overweight/obese
- Sweden: 51 % - overweight/obese

- India, Namibia, Botswana

WHO: Global status report on non-communicable diseases, NCD´s

For persons with physical impairments, such as SCI, the proportion is much bigger

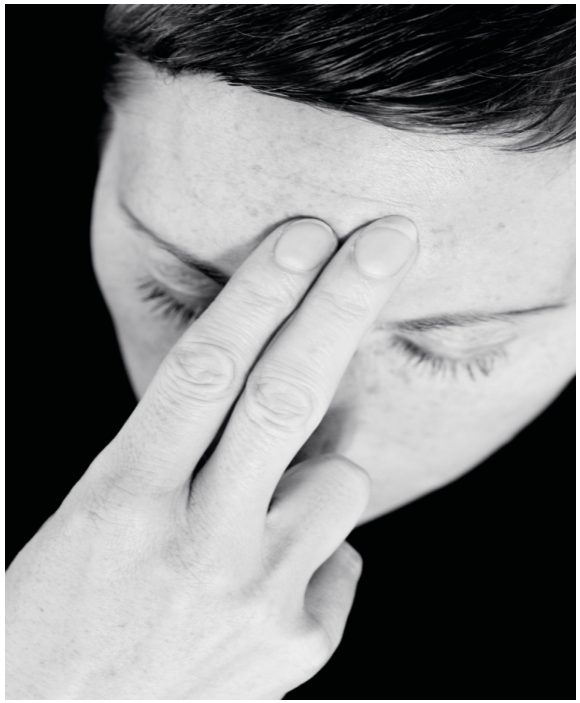
Reduced energy expenditure

- Low muscle mass:
  - decrease in Basal Metabolic Rate, BMR
- Low muscle function:
  - decrease in physical activity
  - use of smaller muscles in the arms

= Decrease in Total Energy Expenditure, TEE

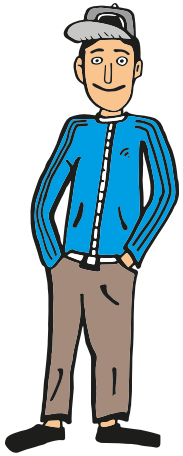
Together with:

- Excess calorie intake
- Medication: (antidepressant, morphine preparations)
- Spasticity treatment: Baclofen
- Changed life situation
- Lost body sensation



Gorgey AS, Gater DR Jr. Prevalence of obesity after spinal cord injury. Top Spinal Cord Inj Rehabil. 2007;12(4):1-7

Adjust your fuel intake to a smaller engine!

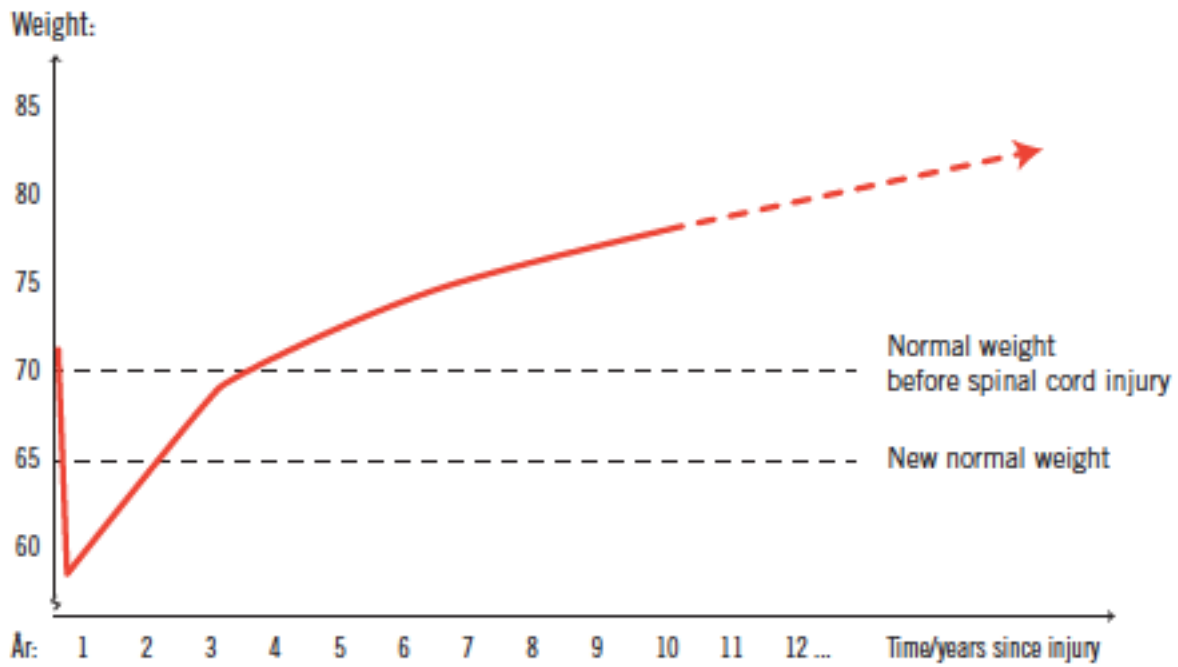


David,
before SCI
39 years
174 cm
68 kilograms
BMI 22.5

David,
Paraplegic
39 years
174 cm
62 kilograms
BMI 20.5

David,
Tetraplegic
39 år
174 cm
59 kilograms
BMI 19.2

Common weight development



Crane D A, Little J W, Burns S P.
Weight gain following spinal cord injury: a pilot study.
J Spinal Cord Med. 2011 Mar; 34(2): 227–232.

Energy requirement, how much you burn, is relative to:

- *Age* – children and younger persons have higher energy requirements than those who are older.
- *Gender* – in general, men have higher energy requirements than women because of their greater "lean body mass".
- *Body composition* – a person with large muscle mass requires more fuel and has a faster metabolic rate than the same person with less muscle mass.
- *Level of activity* – increased physical activity requires more energy than being sedentary.
- *A genetic component* - that influences the metabolic rate.

Problems related to overweight and or obesity:

- Mobility/transfer - function, independence and participation
- Overuse/wear and tear on the body (shoulders and arms)
- Pressure areas, skin folds/excoriation
- Respiratory function, sleeping apnea
- Leakage (urine)
- "Looks" – look different from before (self esteem)
- Injury risks - nursing staff/disability support worker
- Abdominal obesity increased risk: CVD, metabolic syndrome: high blood pressure, impaired insulin sensitivity, blood lipids, blood clotting and diabetes, fatty liver, a number of cancers

Clinical Assessment and Management of Obesity in Individuals With Spinal Cord Injury: A Review
J Spinal Cord Med. 2008;31:361-372

Buchholz AC, Bugaresti JM. A review of body mass index and waist circumference as markers of obesity and coronary heart disease risk in persons with chronic spinal cord injury. Spinal Cord. 2005 Sep;43(9):513-8.

Why do you want to loose weight?

1. Mobility/transfer - function, independence and participation

2. Overuse/wear and tear on the body (shoulders and arms)

3. The wheelchair becomes too tight

4. “Looks” and self-esteem: “I don’t recognize myself”

5. Injury risks - nursing staff/disability support worker

Blackmer J, Marshall S. Obesity and spinal cord injury: an observational study. Spinal Cord. 1997:35: 245-247.

Decrease in function!

" … patients encountered several problems specifically related to their obesity … and were far below the expected *functional outcome level* for C7 tetraplegia."

Blackmer J, Marshall S. Obesity and spinal cord injury: an observational study. Spinal Cord. 1997:35: 245-247.

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The “normal weight” after injury should be lower than before injury

- Approximate weight loss (lean body mass, bone)
  - Paraplegia ≈ 4.5-7 kg
  - Tetraplegia ≈ 7-9 kg

Jones LM, Legge M, Goulding A. Healthy body mass index values often underestimate body fat in men with spinal cord injury. Arch Phys Med Rehabil. 2003 Jul;84(7):1068-71.

Laughton GE, Buchholz AC, Martin Ginis KA, Goy RE. Lowering body mass index cutoffs better identifies obese persons with spinal cord injury. Spinal Cord. 2009 Oct;47(10):757-62.

Pfeiffer SC, Blust P, Leyson JF. Nutritional assessment of the spinal cord injured patient. J Am Diet Assoc 1981;78:501-505.

BMI Body Mass Index
- estimation of weight from a health perspective

I – General population

Under W	< 18,5
Normal W	18,5 – 24,9
Over W	25,0 – 29,9
Obesity I	30,0 – 34,9
Obesity II	35,0 – 39,9
Obesity III-	40,0 –

II - Paraplegia

Under W	< 17,1
Normal W	17,1 – 23,0
Over W	23,1 – 27,7
Obesity I	27,8 – 32,3
Obesity II	32,4 – 36,9
Obesity III-	37,0 –

7,5% diminished body weight (muscle- and bone mass)

(A-C Lagerström calculations; Rasman DN et al. Body composition of patients with SCI. Europ J Clin Nutr 1988;42:765-773)

BMI Body Mass Index
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Over W	25,0 – 29,9
Obesity I	30,0 – 34,9
Obesity II	35,0 – 39,9
Obesity III-	40,0 –

III - Tetraplegia

Under W	< 16,2
Normal W	16,2 – 21,8
Over W	21,9 – 26,2
Obesity I	26,3 – 30,5
Obesity II	30,6 – 34,9
Obesity III-	35,0 –

12 % diminished body weight (muscle- and bone mass)

(A-C Lagerström calculations; Rasman DN et al. Body composition of patients with SCI. Europ J Clin Nutr 1988;42:765-773)

To clarify:
Normal weight for someone 174 cm tall (e.g., David)

- For the general population: 56 – 76 kg
- For paraplegia: 52 – 70 kg
- For tetraplegia: 49 – 66 kg

To clarify:
Normal weight for someone 174 cm tall (e.g., David)

- For the general population: 56 – 76 kg
- For paraplegia: 52 – 70 kg
- For tetraplegia: 49 – 66 kg

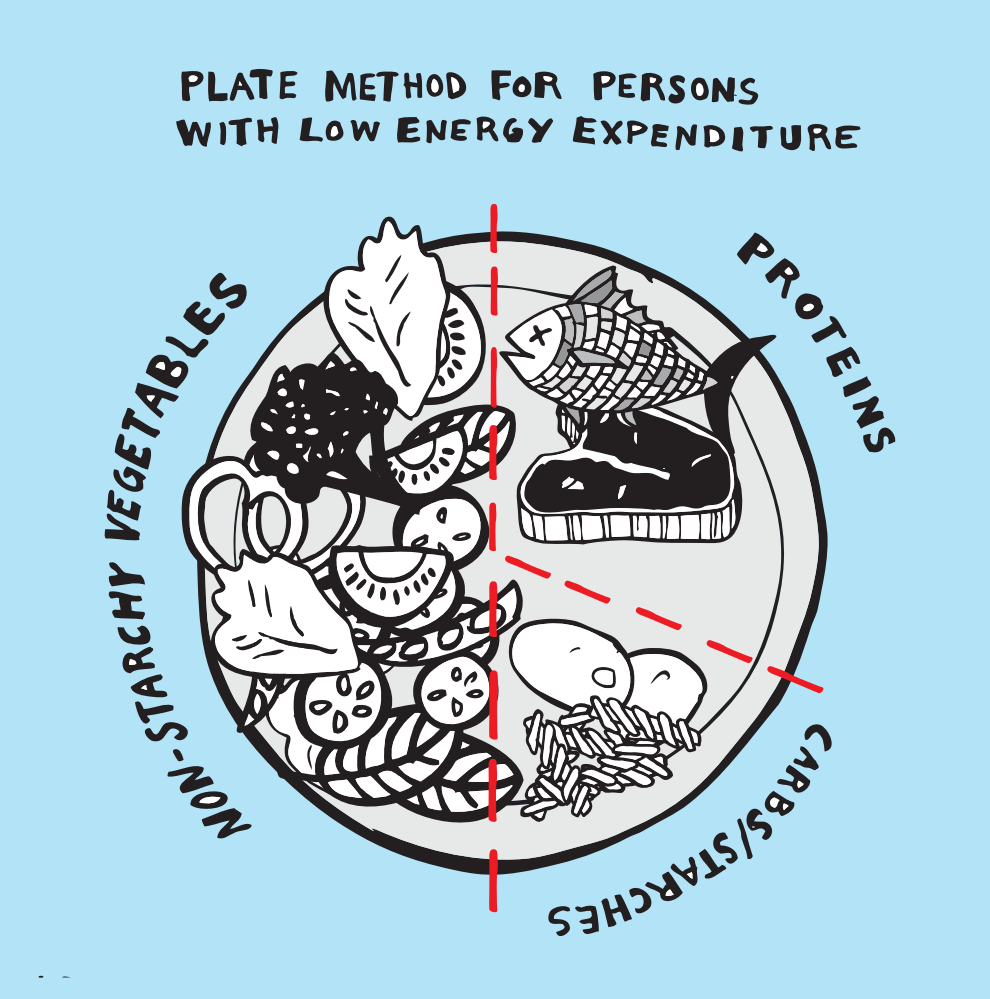
An easier way of checking your weight:

Women: A waist measurement over 88 cm is defined as abdominal obesity.

Men: A waist measurement over 102 cm is defined as abdominal obesity.

The concept of ”less but better”

The adapted Plate Method – a simple pedagogical tool



Best tips!

1. *Smaller amounts of food*
2. *Don’t snack*
3. *Foods that make you feel full and help control sugar cravings*
4. *Stay motivated*
5. *Plan for the long-term and avoid yo-yo dieting*

How often do you eat vegetables and/or root vegetables (fresh, frozen or cooked)?			
Twice per day or more often ☐ 3 points	Daily ☐ 2 points	A few times per week ☐ 1 point	Once per week or less often ☐ 0 points
How often do you eat fruit and/or berries (fresh, frozen or cooked)?			
Twice per day or more often ☐ 3 points	Daily ☐ 2 points	A few times per week ☐ 1 point	Once per week or less often ☐ 0 points
How often do you eat fish or seafood as a main course, in salads or on a sandwich?			
Three times per week or more often ☐ 3 points	Twice per week ☐ 2 points	Once per week ☐ 1 point	A few times per month or less often ☐ 0 points
How often do you consume sweets, chips/crisps or sweet drinks like soda/juice?			
Twice per day or more often ☐ 0 points	Daily ☐ 1 point	A few times per week ☐ 2 points	A few times per month or less ☐ 3 points

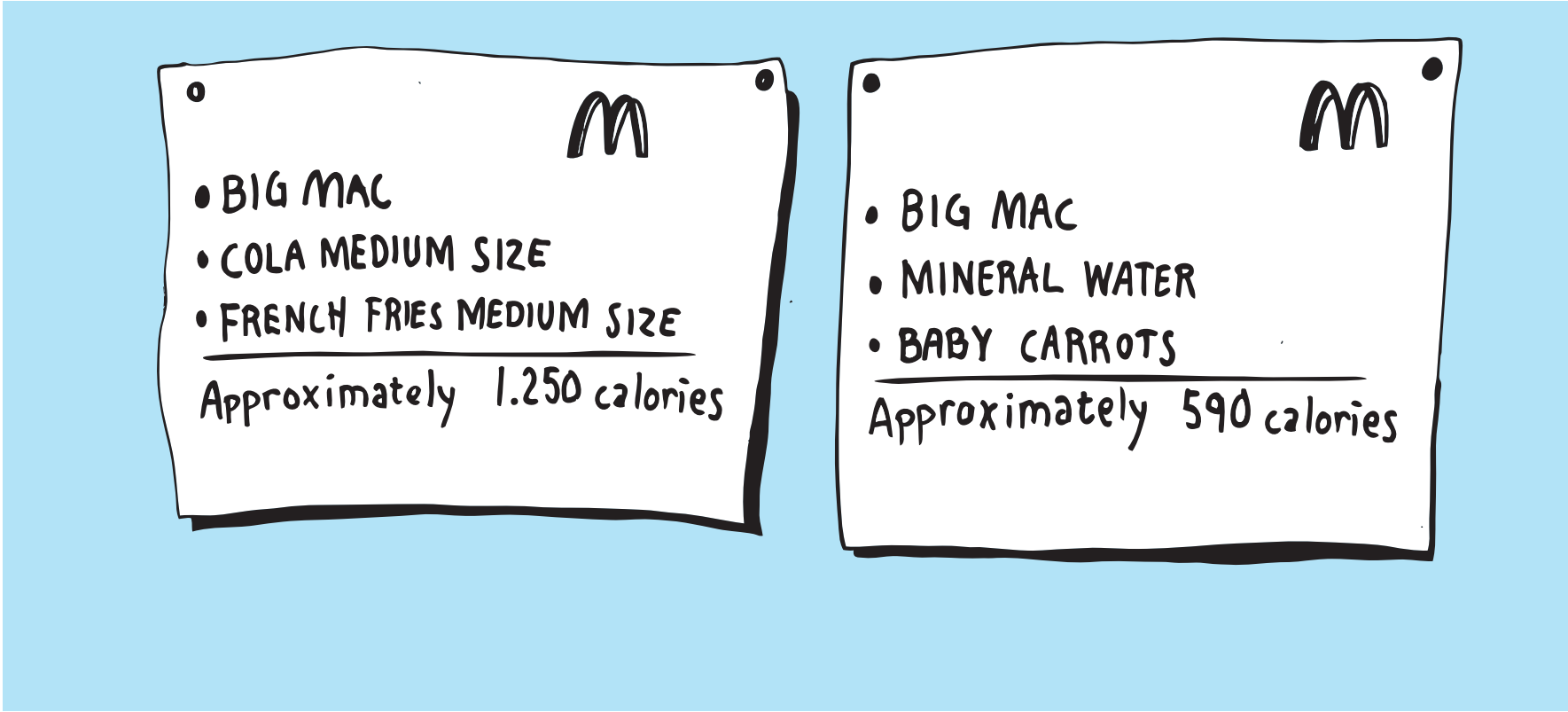
How healthy is your diet?

9-12 points – Congratulations! You have healthy eating habits and for the most part follow dietary recommendations (approximately 10% of the population).

5-8 points – Most people land here (approximately 70% of the population). Lots of opportunity for improvement!

0-4 points – Very unhealthy eating habits (approximately 20% of the population).

Concrete energy adaptation!



Physical activity and exercise:

- very important for overall health!
- not a method of weight loss! Though it helps!

- Wheelchair propelling > 50 min
  (outside at a good speed)
- Brisk walk 30 min

To burn 150 calories

equivalent to calories in:

- 1.5 glasses of wine or
- butter to three sandwiches or
- 1.5 bananas

Physical activity and exercise

- *makes it easier to maintain your weight*
- *gives some "space" to eat a bit more without weight gain*
- *gives better appetite control*
- *builds strength and independence*
- *affects sense of well-being and motivation, which leads to better compliance with dietary recommendations and lower energy intake – which leads to weight loss*

The most important things to keep in mind:

- Eat smaller portions
- Vary your diet
- Increase the proportion of vegetables
- Avoid sugar and fast foods
- Do not skip meals
- Keep an eye on your weight

How did you do to loose weight?

“I have lost weight by eating better and less. I skip junk food and anything containing sugar. I try to eat regularly, drink water for my meals and eat more vegetables. My transfers are easier, my stomach feels much better and I feel much better. "

Before!

After!

How did you do to loose weight?

“I have lost weight by eating better and less. I skip junk food and anything containing sugar. I try to eat regularly, drink water for my meals and eat more vegetables. My transfers are easier, my stomach feels much better and I feel much better. "

Before!

After!

Low body weight is paramount for the SCI persons functional performance!

Thank You!

www.spinalis.se
www.ryggmärgsskada.se
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How much can I eat? How big is my energy requirement?

Example: 39-year-old healthy, spinal cord injured man, 174 cm tall
- before his SCI, a approximate daily energy expenditure 2.500 kcal/day

Function level	"Ideal weight" BMI	BMI	Energy consumption (kcal) per kilo body weight, "ideal weight"	Estimated daily consumption
Walking	68 kg	22	30 kcal/kg body weight	**2040** kcal
Paraplegic	62 kg	20.5	28 kcal/kg body weight	1763 kcal
Tetraplegic	58 kg	18.9	23 kcal/kg body weight	**1334** kcal

- Powell, Frost 2010

Physical activity level, age, and estimated calories required per day – general population

High level of activity:

Men

Age	18–30	3,200 calories
	31–60	3,000 calories
	61–74	2,600 calories

Women

Age	18–30	2,500 calories
	31–60	2,400 calories
	61–74	2,200 calories

Medium level of activity:

Men

Age	18–30	2,800 calories
	31–60	2,600 calories
	61–74	2,300 calories

Women

Age	18–30	2,300 calories
	31–60	2,100 calories
	61–74	1,900 calories

Low level of activity:

Men

Age	18–30	2,500 calories
	31–60	2,300 calories
	61–74	2,000 calories

Women

Age	18–30	2,000 calories
	31–60	1,800 calories
	61–74	1,700 calories

Very low level of activity/wheelchair users:

Men	1,700 calories (detailed information is missing)
Women	1,500 calories (detailed information is missing)

… a person with high level tetraplegia downt to 1,000 calories….