Hepatitis C Choices in Care

August 11 & 12, 2007

Denver, Colorado

The Body in Motion: Exercise and Wellness

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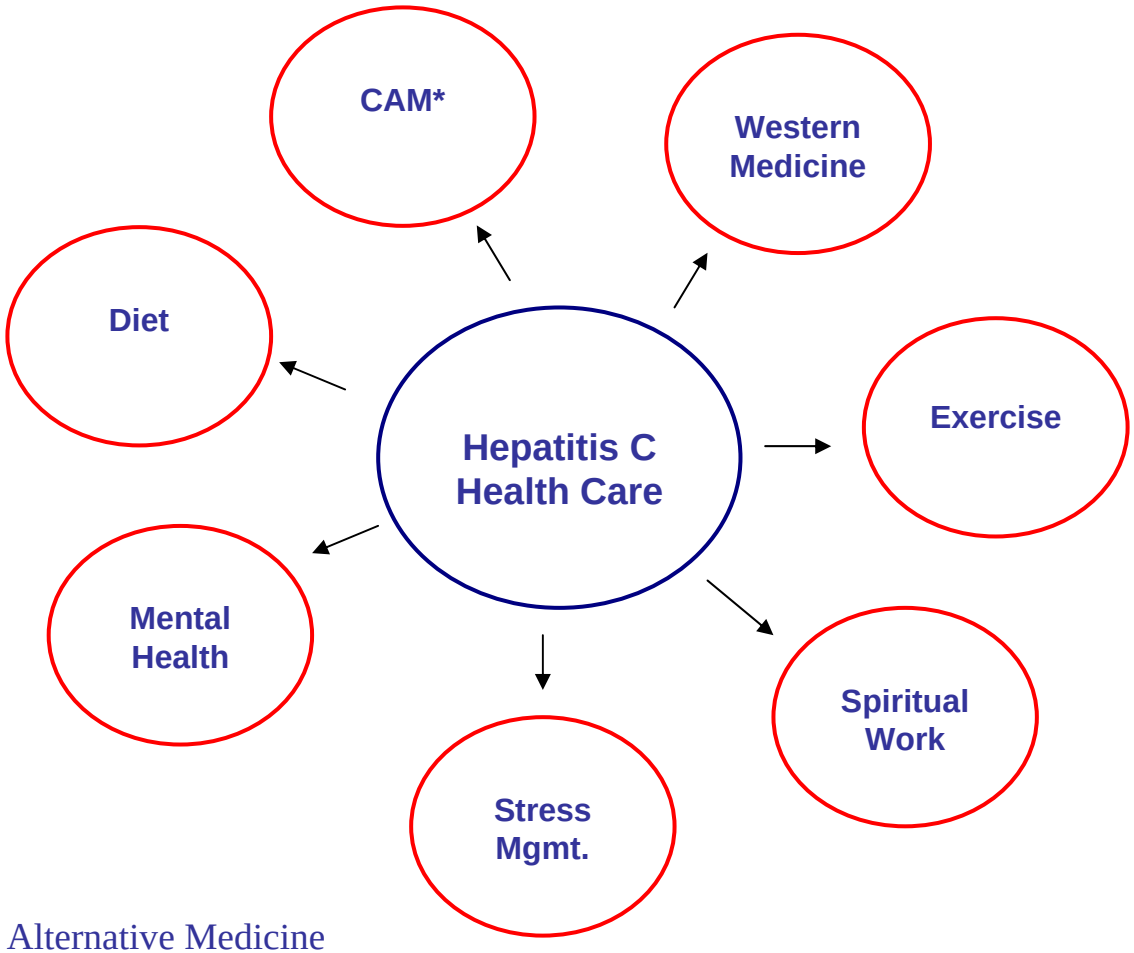
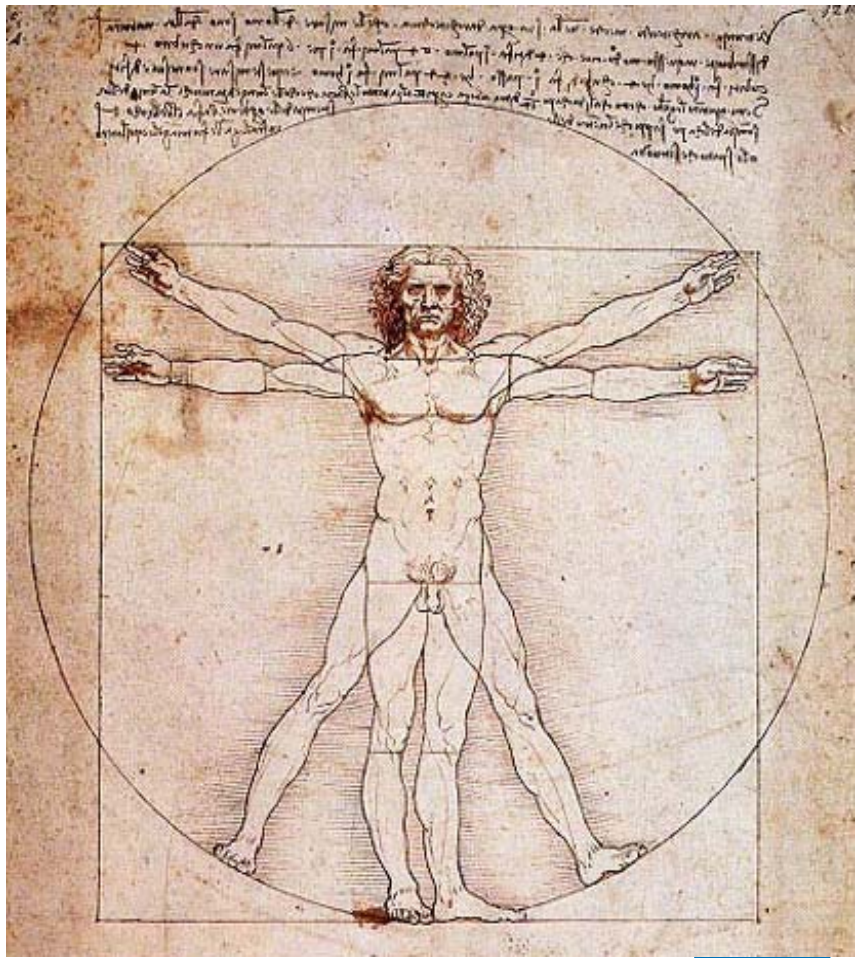
Why Exercise Matters



*Complementary and Alternative Medicine

Humans are Meant to be Active

- Throughout history, man has been active.
- Only recently have humans become sedentary – with many ill effects.



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Detrimental Effects of Inactivity on Humans

- obesity
- diabetes
- heart disease
- joint problems and arthritis
- high blood pressure
- stroke

To maintain health,

people need to be in motion.

Benefits of Exercise:

Musculoskeletal

- maintain muscle mass
- maintain bone mass

Use it or lose it.

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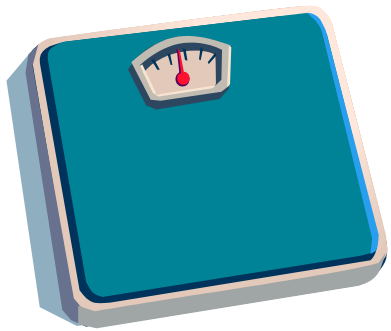
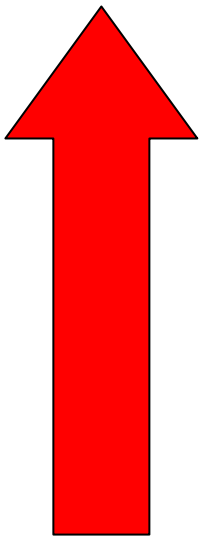
Benefits of Exercise:

Metabolism and Body Weight

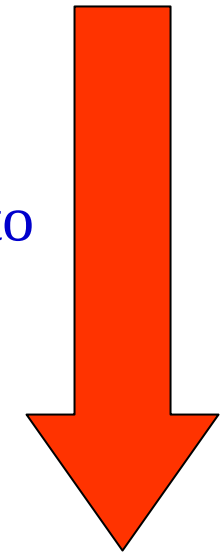
- Exercise burns calories and helps us maintain or achieve a healthy body weight.
- Healthy body weight is particularly important for people with chronic hepatitis C.



Exercising for a Healthy Body Weight



- Metabolic rate
- Efficiency of blood sugar use
- Potential response rate to IFN-based therapy
- Energy
- Mood
- Quality of life



- Insulin resistance
- Liver enzymes
- Risk of fatty liver
- Risk of blood sugar abnormalities
- Risk of abnormal fat deposits in the blood vessels
- Risk of other diseases

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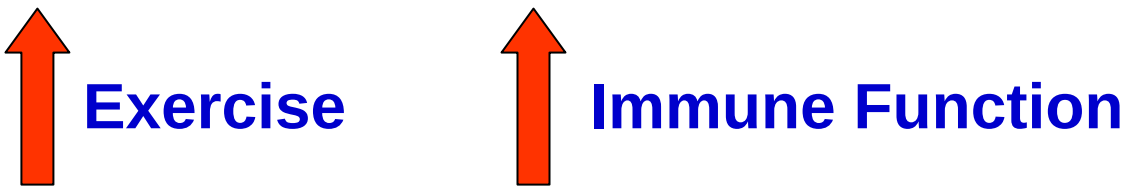
Benefits of Exercise:
Improved Immune Function

Several studies have shown that exercise can enhance specific immune functions.[1, 2, 3, 4]

- increased natural killer cell activity
- increased speed and magnitude of antibody response



1 Fairey AS et al. J Appl Physiol. 2005;98(4):1534-40.
2 Kohut ML et al. Exerc Immunol Rev. 2004;10:6-41.
3 Hong S et al. J Appl Physiol. 2005;98(3):1057-63.
4 Smith TP et al. J Appl Physiol. 2004;97(2):491-8.

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Benefits of Exercise:

Improved Immune Function

Extreme exercise (e.g., marathon running, long-distance bicycle racing, etc.) may be detrimental to the immune system.

Discuss all exercise regimens with your doctors to be sure your activities are healthy and safe.

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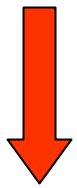
Benefits of Exercise:
Mental Wellness

Several studies have shown that exercise can help alleviate depression.[1, 2, 3]

Exercise



Depression

1 Dunn et al. Am J Prev Med. 2005;28(1):1-8.
2 Dunn et al. Control Clin Trials. 2002;23(5):584-603.
3 Singh et al. J Gerontol A Biol Sci Med Sci. 2005;60(6):768-76.

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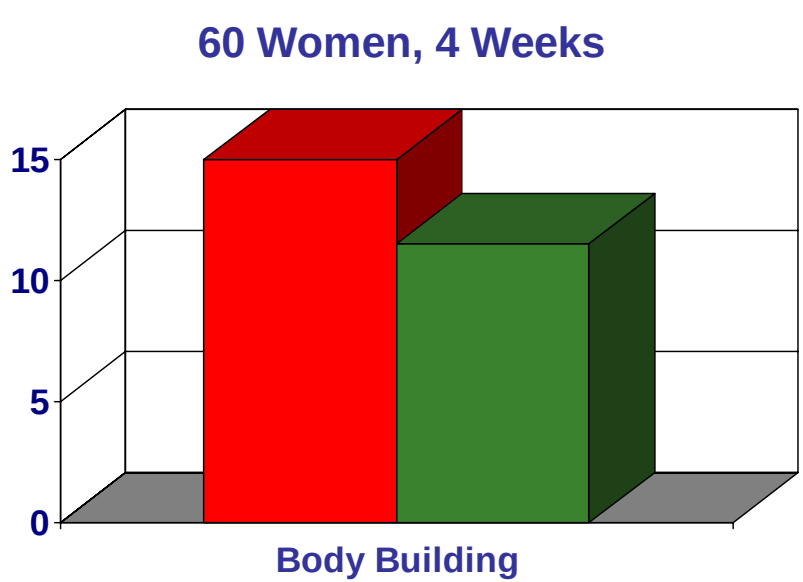
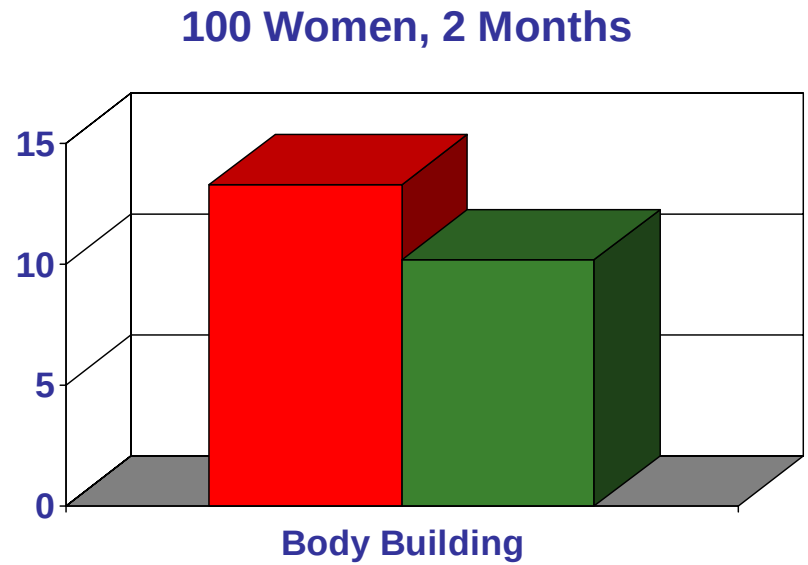
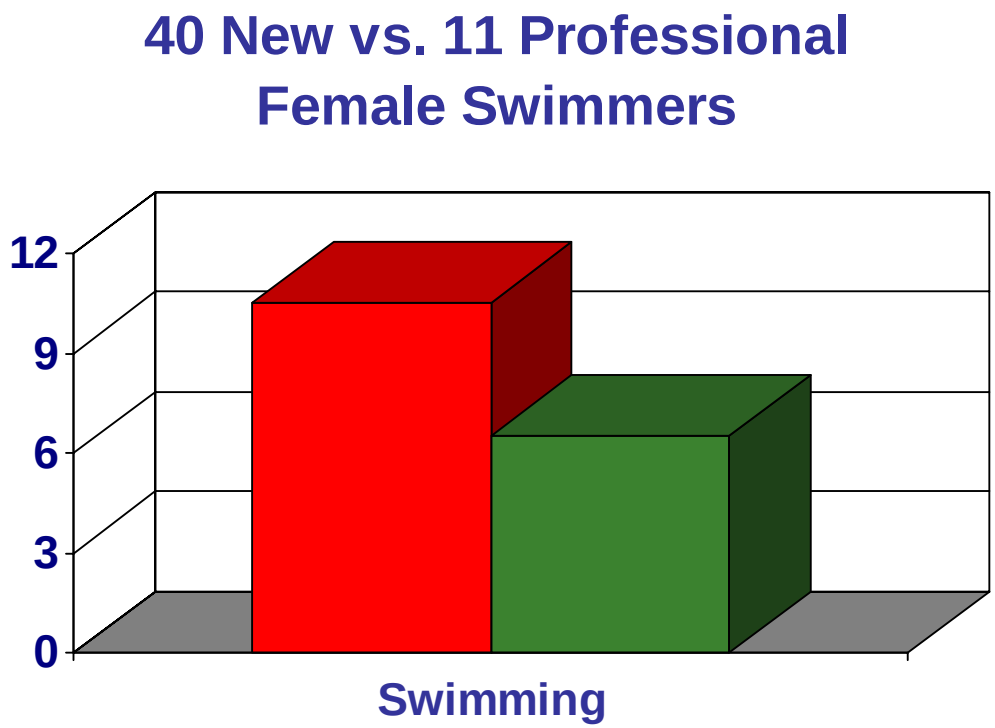
Exercise and Depression Scores





Exercise and Depression Scores

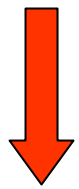


Benefits of Exercise:

Mental Wellness

The **amount of exercise** appears to be related to the beneficial effects on depression.

Exercise



Depression

Benefits of Exercise:
Mental Wellness

- Exercise can be measured by the number of calories burned.
- A recent study found the optimal benefit on depression occurs when **17.5 calories per kilogram of body weight** is expended per week.

What does that mean for you and me?

Dunn et al. Am J Prev Med. 2005;28(1):1-8.

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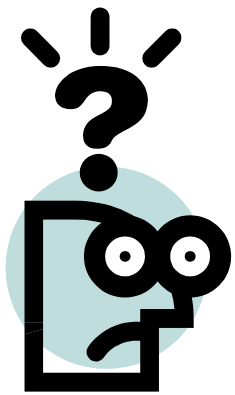
Maximizing Mental Health with Exercise

75 kg person (165 lbs.) needs to exercise 1,300 calories per week for maximum benefit.

How can *I* do that?



Take Your Pick!

2 hours	handball, jogging, rock climbing, jumping rope, touch football, tennis, swimming, stair-climbing, cross-country skiing
2 ½ hours	bicycling, weight-lifting, soccer, roller blading, racquetball, karate
3 hours	aerobics, hiking, half-court basketball, canoeing, kayaking, working out at the gym, water skiing, brisk walking, stacking fire wood, downhill skiing, shoveling snow, scrubbing floors, rearranging furniture, ice skating
3 ½ hours	yoga, whitewater rafting, raking, planting flowers, mowing the lawn
3 ¾ hours	ballroom dancing, gardening
4 hours	horseback riding, water aerobics, washing the car, washing windows, house cleaning
4 ½ hours	swing dancing, ping pong, golfing
6 hours	casual walking, playing piano
7 hours	vacuuming
16 ½ hours	kissing

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Other Benefits of Physical Activity

- cardiovascular – decreased risk of heart attack and stroke
- cardiorespiratory – improved aerobic strength and endurance
- decreased risk of diabetes
- decreased risk of osteoarthritis; improved mobility in people with arthritis
- decreased risk of certain cancers (related to normal body weight more than exercise per se)
- better sleep patterns

Results of Weight Loss and Exercise in Chronic Liver Disease

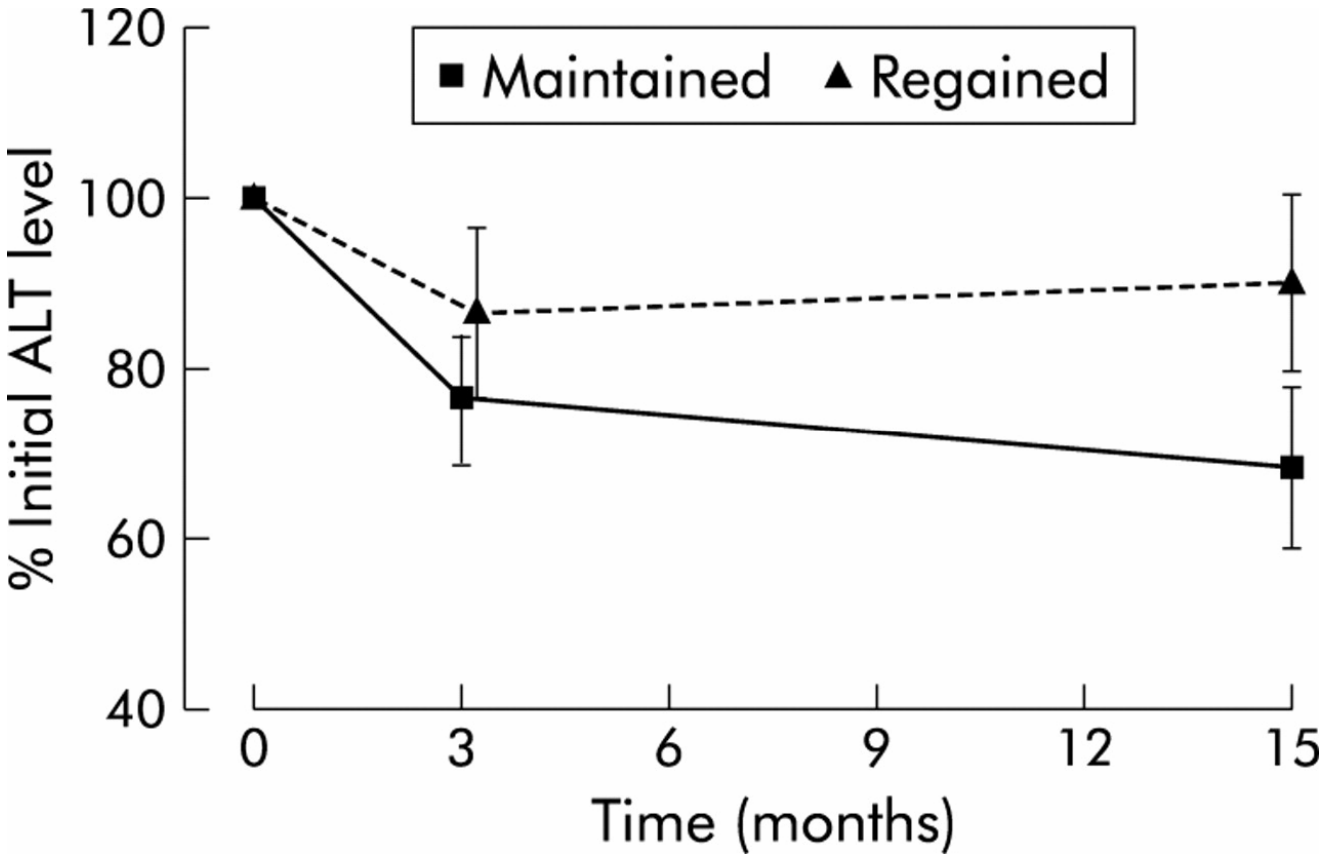
Participants lost an average of 5.8% of their body weight during the 3-month weight loss period.

— At 15 months, 68% had maintained their weight loss.

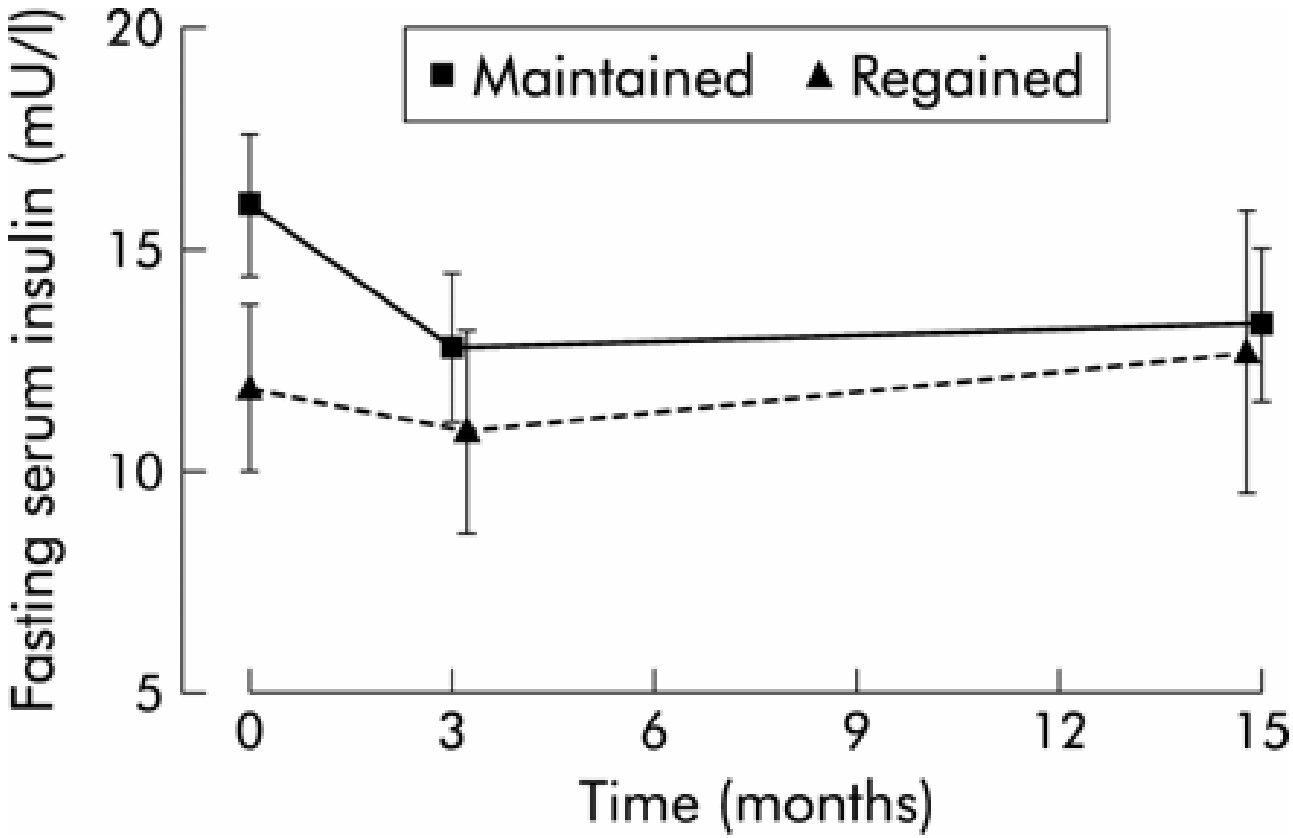
—Those who maintained their weight loss continued to exercise during the maintenance phase of the study.

—Those who regained weight did not continue to exercise at the recommended level during the follow-up maintenance period.

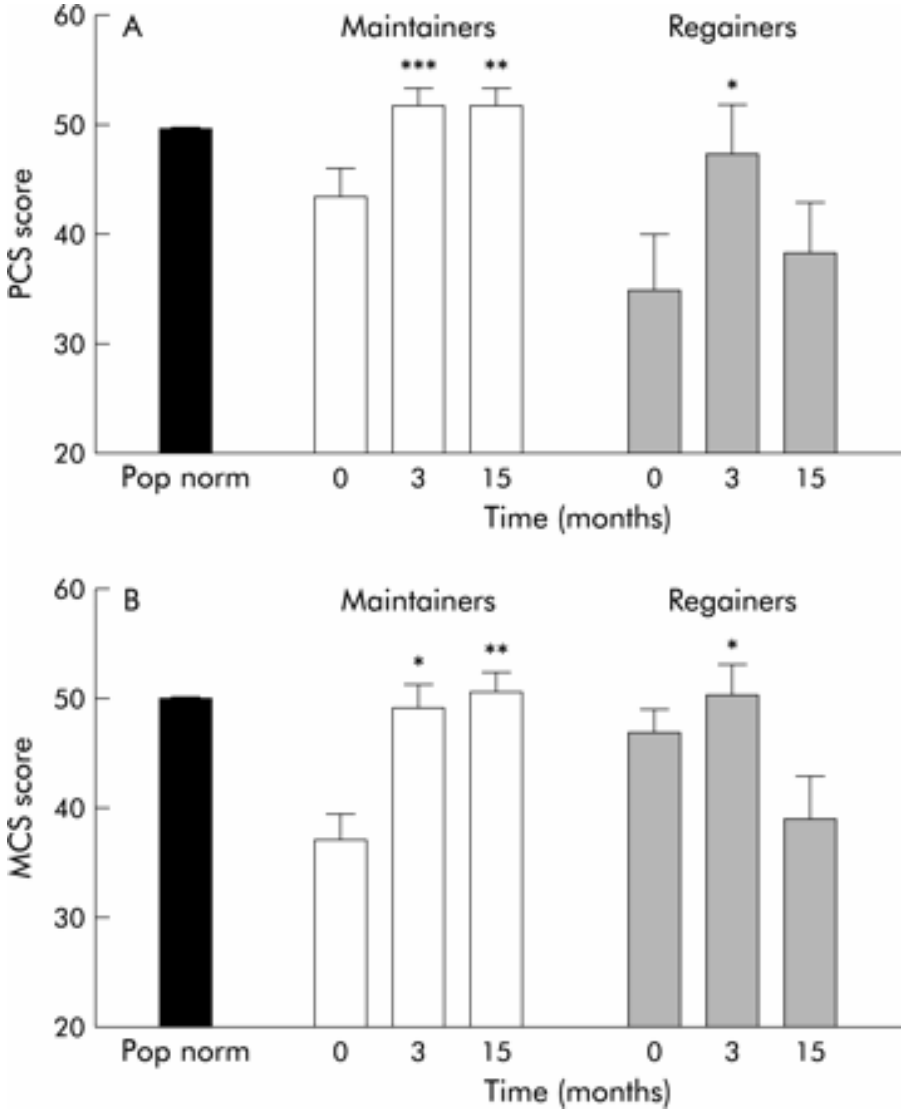
ALT Decreased in Proportion to Weight Loss



Insulin Decreased in Proportion to Weight Loss



Improved Quality of Life with Weight Loss



Pop norm = population norm

PSC = physical scale

MCS = mental scale

higher score = higher quality of life

Exercise During Treatment

- Profound fatigue is a common side effect of interferon-based therapy for hepatitis C.
- Low energy levels may make keeping up with your usual activities (including your regular exercise routine) difficult.

Exercise During Treatment

- Exercise may need to be modified or cut back substantially if you experience profound fatigue while on treatment.
- Discuss fatigue with your doctor; medical treatment may help alleviate symptoms related to anemia.

Exercise During Treatment

- If at all possible, keep up some form of non-strenuous exercise during treatment, such as chair exercises.
  - People who become completely sedentary actually experience further decreases in energy as activity levels drop.
- Non-strenuous exercise may actually improve your energy level, as has been shown in patients with chronic fatigue syndrome.

The Fatigue Factor:

Enhanced Activity Counteracts Fatigue

Pacing or *graded exercise* has been shown to be successful even among people with chronic fatigue syndrome (CFS).

– A 12-week study of 61 patients with CFS found that graded exercise performed twice daily was associated with improvements in physical work capacity, resting blood pressure, cognitive function, and decreased depression.

Wallman KE et al. Med J Aust. 2004;180(9):444-8.

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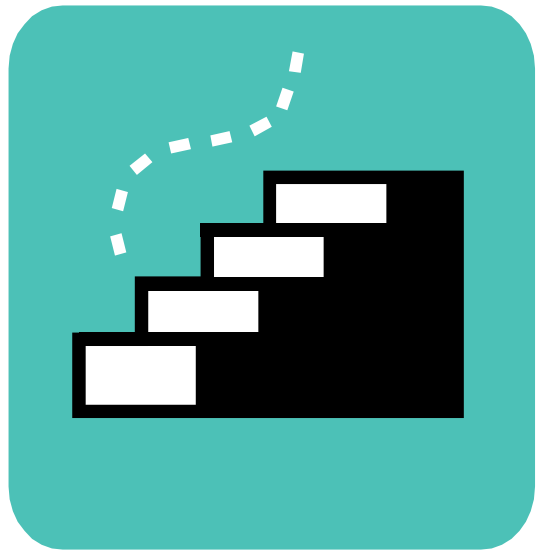
Putting Your Body In Motion

It ALL counts!

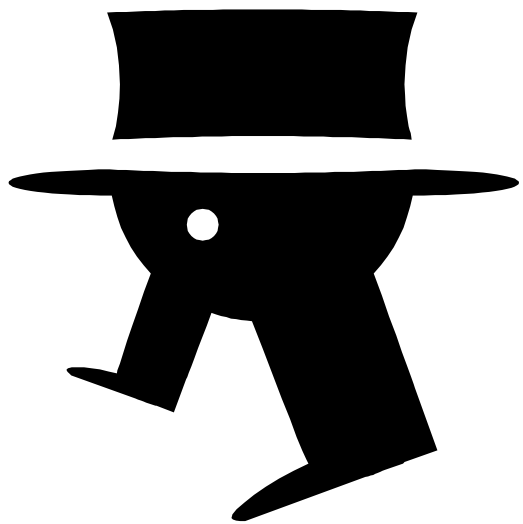
Putting Your Body In Motion: Simple Ways to Get Started

- Take the stairs instead of the elevator – even if you only walk one flight of stairs at first and ride the rest of the way.
- If you have stairs in your home, make an extra trip up and down each time you have to use them.
- Walk on the escalator (up or down) instead of standing still.



Putting Your Body In Motion: Simple Ways to Get Started

- Park at the end of the row in the parking lot instead of in the closest space.
- Take the long route rather than the shortest one when walking from one place to another.
- Get a step counter, and try to increase your steps every day, a bit at a time.



Putting Your Body In Motion: Simple Ways to Get Started

- Do some straight or flexed leg raises, or another simple exercise with your legs while on the phone.
- Plan to do 5 repetitions of an exercise of your choosing before making each phone call.

Unknowns

- Does exercise improve response rates to interferon-based therapy?
- Does exercise slow HCV disease progression?
- Does exercise reduce extra-hepatic manifestations of chronic hepatitis C?
- Does exercise influence the risk of liver cancer?

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Unknowns

We don’t know the answers yet.

But we do know enough about the benefits of exercise to know that exercise important to all people’s health…

with or without hepatitis C.

Keep Your Body Moving…

- for your mental health
- for your immune health
- for your well-being and peace of mind
- for your heart and lungs
- for your muscles and bones …

For your life.