



The idea that if you'll just exercise, eat right and take better care of yourself, your health will improve is **firmly planted in the American psyche**. After all, it works for chronic illnesses like type 2 diabetes and heart disease. It should work for CFIDS. But it doesn't. CFIDS is an **exercise enigma**. What should patients and their doctors do in the face of this enigma? Read on.

**BY DR. CHRISTOPHER R. SNELL, DR. J. MARK VANNESS
AND STACI R. STEVENS, GUEST CONTRIBUTORS**

When Working Out Doesn't Work Out

It is somewhat ironic that for an illness where patients are often diagnosed as deconditioned and characterized as lazy, exercise exacerbates symptoms rather than relieving them. Well-meaning health care professionals often recommend aerobic exercise as a cure-all for the symptoms of CFIDS without fully understanding the potential consequences of their prescriptions. As anyone with CFIDS who has attempted to "get fit" using traditional approaches to exercise knows, the results can be devastating.

Improved fitness is generally achieved by progressively taxing the heart, lungs and circulatory system through increases in duration and intensity of activity, for instance, running faster and for longer periods of time.

This is often called graded aerobic exercise, and it has shown some success for treatment of CFIDS. However, this success may not accurately portray the exercise experience for a vast majority of people with CFIDS (PWCs). Typically, graded exercise studies employ some form of exercise stress test as a baseline measure for assessing improvements in physical functioning. Given the trauma such tests can engender, it seems reasonable that many potential participants choose not to continue with the study after the initial exercise test. One patient, for instance, told us the exercise stress test "was as bad as the worst days I ever had in six years of illness." Therefore, positive results from graded aerobic exercise studies may

only reflect outcomes for a high-functioning and relatively small percentage of the CFIDS population. Contrary to the popular mantra “no pain, no gain,” the reality of exercise for many PWCs is “no gain, much pain!”

The oxygen debt roller coaster

By attempting to exercise on their good days, PWCs often become trapped in a cycle of overwork and collapse. The consequences of symptom exacerbation, postexertional malaise and even collapse can ultimately lead to activity avoidance. In addition to the primary effects of their illness, patients are now trapped in a downward spiral of deconditioning, with all its attendant problems. It is a cruel irony. They cannot exercise because it makes them ill, and because they are unable to exercise they become sicker still.


The situation is further complicated by the fact that physical inactivity imposed by chronic illness can exacerbate already limited physical abilities and lead to greater risk of heart disease, obesity, diabetes, osteoporosis and injury. However, all may not be lost. The solution perhaps lies in understanding how the body uses energy.

It is painfully obvious that many PWCs don't recover well from continuous aerobic activity: “I always thought that exercise meant aerobic activity—swimming, running, biking,” said one patient. “Every time I do something aerobic I pay for it.” This may be because, for PWCs, the activity is not aerobic.

The aerobic energy system depends on a constant supply of

DID YOU KNOW?

If aerobic exercise is causing you to crash and burn, it may be because the way your body processes oxygen during aerobic activity is impaired. There is evidence to suggest that there may not be an adequate supply of oxygen during exercise for people with CFIDS, shifting energy production from aerobic to anaerobic processes. The resulting oxygen debt could be contributing to the roller-coaster effect CFIDS patients feel following exercise. The good news is there are ways to overcome this deficit.



oxygen being delivered to active muscles. There is evidence to suggest that this process may be impaired in CFIDS, with a possible link to immune dysfunction. In the absence of an adequate supply of oxygen, energy production shifts to anaerobic (without oxygen) processes. These systems are very effective at producing high levels of energy for short periods of time, but not without a cost. That cost is oxygen debt, which is the difference between oxygen required for activity and oxygen supplied and used.

To picture what oxygen debt looks like, imagine athletes doubled over, or prostrate on the ground, unable to speak and gasping for air following a 100-meter sprint. Oxygen debt equals fatigue and, before normalcy can return, it must be repaid. While this oxygen debt roller coaster is not unique to CFIDS, interest rates on the

payback may be significantly higher. “I felt fatigued, like I had walked a hundred miles the day before,” said one PWC following exercise. “I felt very tired and slept most of the day” is another usual response.

Redefining exercise

It is our experience that if physical activity is to become a positive in the lives of CFIDS patients, they must forget the traditional approaches to training that

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so often fail. It's not how much effort you put out, but rather how well you recover from the effort that is important. Patients need to recognize that it's okay to exercise for a very short time and rest. The



Author Staci Stevens works with PWCs to help them redefine their notion of exercise and set activity at appropriate levels to avoid relapse. A PWC herself, Stevens knows all about postexertional malaise and crushing fatigue following exercise and activity.

activity should be restorative, or analeptic, serving to relieve, not exacerbate, symptoms. Redefining exercise in this way acknowledges that a cookie-cutter approach to exercise therapy for CFIDS will not work because one size does not fit all. To be successful, any exercise program should be tailored to match the individual patient's functionality and symptom fluctuations. As a prelude to engaging in exercise, patients should ask themselves: What activities do I already do? How do I feel immediately after and the following day? Do I experience post-activity relapse? What are my exercise goals?

Analeptic exercise

It should be noted that we are not recommending exercise as a cure for CFIDS. Analeptic exercise is intended to restore functionality lost through inactivity, give patients a sense of control over their illness and, hopefully, improve the quality of their lives. Some patients also report symptom relief, in particular a reduction in muscle and joint soreness and improved cognitive functioning. One patient told us: "I really see exercise as a plus for reducing muscle and joint pain. I feel like I am getting blood circulation. I feel I can think better."

To this end, activities are designed to train the short-term, or anaerobic, energy system to increase

range of motion and improve functional strength—the strength necessary to successfully and comfortably perform normal activities of daily living. Two key elements are matching program and function by setting activity levels at appropriate intensities and for reasonable durations.

To find an appropriate baseline for activity, we propose that initial durations should not exceed 30 seconds, about the length of a typical television commercial. As for intensity levels, it is essential that patients recover in a reasonable time. To this end, rest is a critical component of analeptic exercise therapy. We suggest that rest periods be at least three times, and up to six times, longer than exercise bouts. It's also likely that patients will need to reschedule or discontinue another daily activity to make time and reserve energy for exercise.

When exercise does work out

1 A typical analeptic exercise program progresses through four stages. Patients should begin with stretching and strengthening exercises. These might include focused breathing exercises, step-ups, wall push-ups, modified chair dips and toe raises. Stretching can be done between strengthening exercises. An exercise progression goal would be increasing from one set of four repetitions to two sets of eight.

2 For stage two, as strength improves, resistance in the form of Thera-Bands or light weights can be added to the workout. Over time patients should, as one expressed it, “feel stronger, more flexible and able to get around better.”

3 Stage three of the program comprises dose-controlled interval training—exercising large muscle groups for a specific length of time interspersed with periods of rest. This could involve walking up and down stairs with a chair situated on the landing to permit resting between intervals. Success of this stage is dependent on patients learning to monitor heart rate so they avoid pushing too hard and triggering relapse. A functional goal would be for the patient to engage in activities of daily living without precipitating post-exertional malaise.

4 Finally comes the maintenance stage. To ensure patients transition from chronic fatigue to chronic exercise, it’s important that they perceive improvements in functionality. Setting realistic, functional goals and keeping an activity diary can provide motivation. Positive feedback and support from family, friends and care providers is essential to success.

Exercise *can* work out and the enigma *can* be resolved when PWCs are empowered to get off the roller coaster and off the couch, take control of their illness and experience enhanced quality of life. As one PWC recently shared, “It gives me a feeling of being empowered because it’s something that I’m doing. I’m not sitting in a chair feeling victimized.” ■



Authors Snell, Stevens and VanNess

Christopher Snell, Ph.D., and J. Mark VanNess, Ph.D., are professors in the Sport Sciences Department at the University of the Pacific. They have been involved in CFIDS research for the past six years and have published widely on CFIDS-related topics. Staci Stevens, M.A., is an exercise physiologist and PWC who has designed rehabilitation programs for CFIDS patients for the last 15 years. She is the chair of the Workwell Foundation, which is dedicated to research and improving quality of life for PWCs. Staci is presently serving as a member of the government’s CFS Advisory Committee.

References

- Fulle, S., Mecocci, P., Fano, G., Vecchiet, I., Vecchini, A., Racciotti, D., et al. Specific oxidative alterations in vastus lateralis muscle of patients with the diagnosis of chronic fatigue syndrome. *Free Radical Biology in Medicine*, 2000; 29(12), 1252-1259.
- Shephard, R.J. Chronic fatigue syndrome, an update. *Sports Medicine*, 2001; 31(3), 167-194.
- Snell, C.R., J.M. VanNess, D.R. Strayer and S.R. Stevens. Physical performance and prediction of 2-5A Synthetase/RNase L antiviral pathway activity in patients with chronic fatigue syndrome. *International Journal of In Vivo Research*, 2002;16(3), 107-110.
- VanNess, J.M., Snell, C.R., Strayer, D.L. and Stevens, S.R. Subclassifying chronic fatigue syndrome through exercise testing. *Medicine and Science in Sports and Exercise*, 2003;35(6), 908-913.

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