

# Exercise prescription for individuals with chronic fatigue syndrome

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*This graded exercise program is suitable for prescription in general practice*

**C**hronic fatigue syndrome (CFS) describes a disorder comprising chronic debilitating fatigue that cannot be explained by any known chronic medical or psychological condition.<sup>1</sup> To date, the only therapies that have consistently ameliorated symptoms in this disorder are cognitive behavioural therapy and graded exercise.<sup>2-5</sup> This article describes a graded exercise program based on the exercise prescription used in our recent randomised controlled trial.<sup>5</sup> This program has since been successfully implemented in a clinical practice. It includes the concept of pacing and is aimed at non-bed-bound, sedentary patients with CFS, as well as those already undertaking minimal aerobic exercise (ie, no more than three sessions per week of 20 minutes' duration).

## Engaging the patient

Engaging patients with CFS in an exercise program can be difficult, as many fear that exercise will exacerbate their symptoms. Patients should therefore be informed that all studies that used an exercise intervention in CFS reported improved physiological and psychological function,<sup>2-5</sup> and that the protocol described here was not associated with any major relapse.<sup>5</sup> Importantly, this exercise protocol is based on individual capabilities and is increased only if the patient is coping. A structured exercise protocol may also help prevent CFS patients overdoing physical activity and consequently exacerbating symptoms on days that they feel comparatively better.

Patients should also be informed that exercise has been associated with improvement in physical function, fatigue and mood disorder in other chronic illnesses, such as cancer,<sup>6</sup> cardiac heart failure,<sup>7</sup> and in particular multiple sclerosis<sup>8</sup> and fibromyalgia,<sup>9</sup> which are both associated with debilitating fatigue, and in which exercise was once considered contraindicated. Finally, aerobic exercise can halt further deconditioning, which would typically further reduce physical capacity and worsen psychological symptoms.<sup>10</sup>

## Preparing for the program

Before beginning any exercise program, patients should be screened by a medical doctor. Patients should also be informed that the exercise sessions are *in addition* to their normal activities,

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and that some initial aches and pains are usual when beginning exercise for the first time.

Patients should purchase or hire a heart rate monitor, as this will assist in keeping heart rate (beats per minute, [bpm]) constant during exercise sessions. Alternatively, heart rate can be determined by assessing pulse rate.

Patients should also be taught how to determine their ratings of perceived exertion (RPE) using the Borg scale<sup>11</sup> (Box 1). Patients must record their RPE on completion of each exercise session and then average these values each fortnight. The averaged RPE value forms the basis for determining the duration of future exercise sessions. An exercise diary is also important (Box 2). This allows patients to monitor progress over time and also assists in linking poor performance with a possible emotional or physiological event.

## The exercise program

Exercise should be attempted once every second day and should be in a form that uses the major muscles of the body, such as walking, jogging, swimming or cycling. The duration of each exercise session during the first fortnight should be negotiated with the patient, and may range from 1 to 10 minutes, depending on individual physical capabilities. For those already exercising, the duration should be one that the individual is currently coping with consistently.

The intensity of the exercise should represent a pace that the individual can perform comfortably. Importantly, this intensity should be determined on a day when symptom severity is typical, rather than either better or worse than usual. The average peak heart rate when exercising at a comfortable pace on a typical day should be recorded, with this intensity representing the patient's target heart rate ( $\pm 3$  bpm) for future sessions. The "warm-up" time that it takes for heart rate to reach this target is included in the overall exercise duration.

## Program monitoring and modification

Patients should contact their doctor the day after their first exercise session to discuss how they coped with the session. If the patient feels that the initial session was too easy (ie, an overall RPE score of 9 or lower), a slight increase in duration could be considered. Conversely, if the RPE score was greater than 14, then the duration of subsequent sessions for that fortnight should be reduced to a time period that elicits an RPE score of 11–14. It is important that the patient be eased gently into the exercise program.

At the end of each fortnight, patients should contact their doctor to determine the next fortnight's exercise prescription. If patients coped with the exercise regimen, did not experience a major relapse, and reported averaged fortnightly RPE values of 14 or less, then the exercise duration for the following fortnight should be increased by 2–5 minutes. If the average RPE score was 15 or

### 1 Borg's Ratings of Perceived Exertion Scale\*

Perceived exertion	Rating
	6
Very, very light	7
	8
Very light	9
	10
Fairly light	11
	12
Somewhat hard	13
	14
Hard	15
	16
Very hard	17
	18
Very, very hard	19
	20

\* Borg G. Psychophysical bases of perceived exertion. *Medicine and Science in Sports and Exercise* 1982; 14 (5): 378.<sup>11</sup>

higher, then the exercise duration should be reduced to a time period that elicits an averaged fortnightly RPE score of 11–14.

The same procedure and recommendations for the first fortnight apply to the next and subsequent fortnights, in that individual target heart rate is kept constant, and RPE scores are recorded after each exercise session and averaged at the end of each fortnight.

Importantly, many CFS sufferers describe fluctuations in their symptoms and capabilities. However, on days that patients feel comparatively well, they *must* adhere to their current exercise regimen and must *not* perform any extra exercise above this level. This rule also applies to normal everyday physical tasks, such as housework and gardening.

In addition, on days when symptoms are worse, patients should either shorten the session to a time they consider manageable or, if feeling particularly unwell, abandon the session altogether.

They should always endeavour to commence the exercise program again when symptoms subside to a tolerable level. When recommencing exercise, the pace should be comfortable, while the duration should be reduced to a time that the individual feels is manageable and elicits an RPE score of 11–14. Patients should then continue at this modified duration for a fortnight and increase this time period for the subsequent fortnight only if the averaged fortnightly RPE score was 14 or lower.

Finally, if the duration of exercise reaches 30 minutes, patients could consider increasing the intensity of sections of the exercise session. An example of this would be where the first minute of every 10 minute section of the session is performed at a higher intensity (RPE, 15–16). The number of higher intensity minutes can be marginally increased each fortnight if averaged fortnightly RPE scores fall within the guidelines described earlier.

### 2 Extract from an exercise diary

Date & time of exercise: Friday 12 Feb, 10.00 am

Exercise duration: 6 mins

Average peak heart rate intensity (comfortable pace): 125 bpm

Rating of perceived exertion (RPE) at the end of the exercise session: 14

General comments: Struggled with the exercise today, felt very tired—but did not sleep well last night.

### Competing interests

None identified.

### References

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### CORRECTIONS

*Re: "Recognition of depression and psychosis by young Australians and their beliefs about treatment", by Annemarie Wright, Meredith G Harris, John H Wiggers, Anthony F Jorm, Sue M Cotton, Susy M Harrigan, Rosalind E Hurworth and Patrick D McGorry, in the 4 July issue of the Journal (Med J Aust 2005; 183: 18–23). There was an error in Box 3 (page 20) under the heading "Rural region A" "Proportion of population". The population number given as  $n = 69\,786$  should have been  $n = 41\,618$ .*

*Re: "Adult domiciliary oxygen therapy. Position statement of the Thoracic Society of Australia and New Zealand", by Christine F McDonald, Alan J Crockett and Iven H Young, in the 20 June issue of the Journal (Med J Aust 2005; 182: 621–626). In the section on "Nocturnal oxygen therapy", the hypoxaemia selection criterion for the study by Chaouat et al (reference 19) on page 623 (column 1) should read " $\text{PaO}_2$  56–69 mmHg (7.4–9.2 kPa)" rather than " $\text{PaO}_2$  56–59 mmHg (7.4–7.8 kPa)".*