

Background

Fatigue is a prevalent symptom that affects patients from the time of diagnosis with Multiple Sclerosis (MS), and sometimes prior to diagnosis. It is multifactorial and can be the result of psychological and/or physiological impact¹, as well as changes in the central neural system. The symptom itself is necessary to address as fatigue can limit the patient both physically and/or mentally.

Activity modification and exercise can assist to reduce deconditioning, improve sleep hygiene and decrease depression². Exercise in MS fatigue has shown moderate effect compared to no exercise or usual care². Even with this knowledge we know that patients with MS limit their activities due to fear of symptom exacerbation³.

Goal

Our primary goal is to aid in fatigue management from an interdisciplinary stand point by giving patients techniques to incorporate into daily routines while promoting overall exercise and activity level. Work toward this goal will be accomplished by establishing baseline data, implementing HEP and task modifications and performing appropriate follow up visits to monitor fatigue and progress HEP. Follow up appointments will be tailored, based on each individual patient's interest and need.

Public Health Implications

Through these interventions, we anticipate patients will experience increased satisfaction, participation, safety, and independence in their daily activities.

Methods and Patient Cases

Timeline: Patients receive an initial PT and OT evaluation at their first or second visit to our clinic to establish baseline and are consented under an IRB approved protocol. Recommendations are given on appropriate follow up treatments (1x/week, 2x/month 1x/month or 3 month follow up) to manage fatigue and increase exercise/activity level.

Patient Reports Outcomes (PROs): Subjective and objective are assessed at baseline and every 3 months. Subjective measures include the Modified Fatigue Impact Scale (MFIS) and Fatigue Severity Scale (FSS) which assess the impact of fatigue on daily activities and the Godin Leisure Exercise Questionnaire which addresses current exercise/activity level. The 6-Minute Walk Test (6MWT) and Berg Balance Assessment/Mini BESTest are used to objectively quantify aerobic capacity/walking ability and balance.

Read and circle a number.	Strongly Disagree Agree	Strongly Agree
1. My motivation is lower when I am fatigued.	1 2 3 4 5 6 7	
2. Exercise brings on my fatigue.	1 2 3 4 5 6 7	
3. I am easily fatigued.	1 2 3 4 5 6 7	
4. Fatigue interferes with my physical functioning.	1 2 3 4 5 6 7	
5. Fatigue causes frequent problems for me.	1 2 3 4 5 6 7	
6. My fatigue prevents sustained physical functioning.	1 2 3 4 5 6 7	
7. Fatigue interferes with carrying out certain duties and responsibilities.	1 2 3 4 5 6 7	
8. Fatigue is among my most disabling symptoms.	1 2 3 4 5 6 7	
9. Fatigue interferes with my work, family, or social life.	1 2 3 4 5 6 7	

Because of my fatigue during the past 4 weeks	Never	Rarely	Sometimes	Often	Almost Always	Times Per Week
1. I have been less alert.	0	1	2	3	4	
2. I have had difficulty paying attention for long periods of time.	0	1	2	3	4	
3. I have been unable to think clearly.	0	1	2	3	4	
4. I have been clumsy and uncoordinated.	0	1	2	3	4	
5. I have been forgetful.	0	1	2	3	4	
6. I have had to pace myself in my physical activities.	0	1	2	3	4	
7. I have been less motivated to do anything that requires physical effort.	0	1	2	3	4	
8. I have been less motivated to participate in social activities.	0	1	2	3	4	
9. I have been limited in my ability to do things away from home.	0	1	2	3	4	
10. I have trouble maintaining physical effort for long periods.	0	1	2	3	4	
11. I have had difficulty making decisions.	0	1	2	3	4	
12. I have been less motivated to do anything that requires thinking.	0	1	2	3	4	
13. My muscles have felt weak.	0	1	2	3	4	
14. I have been physically uncomfortable.	0	1	2	3	4	
15. I have had trouble finishing tasks that require thinking.	0	1	2	3	4	
16. I have had difficulty organizing my thoughts when doing things at home or at work.	0	1	2	3	4	
17. I have been less able to complete tasks that require physical effort.	0	1	2	3	4	
18. My thinking has been slowed down.	0	1	2	3	4	
19. I have had trouble concentrating.	0	1	2	3	4	
20. I have limited my physical activities.	0	1	2	3	4	
21. I have needed to rest more often or for longer periods.	0	1	2	3	4	

Godin Leisure-Time Exercise Questionnaire	
1. During a typical 7-day period (a week), how many times on the average do you do the following kinds of exercise for more than 15 minutes during your free time (write on each line the appropriate number).	
a) STRENUOUS EXERCISE (HEART BEATS RAPIDLY) (e.g., running, jogging, hockey, football, soccer, squash, basketball, cross country skiing, judo, roller skating, vigorous swimming, vigorous long distance bicycling)	Times Per Week
b) MODERATE EXERCISE (NOT EXHAUSTING) (e.g., fast walking, baseball, tennis, easy bicycling, volleyball, badminton, easy swimming, alpine skiing, popular and folk dancing)	Times Per Week
c) MILD EXERCISE (MINIMAL EFFORT) (e.g., yoga, archery, fishing from river bank, bowling, horseshoes, golf, snow-mobbing, easy walking)	Times Per Week
2. During a typical 7-day period (a week), in your leisure time, how often do you engage in any regular activity long enough to work up a sweat (heart beats rapidly)?	
OFTEN 1. 0	SOMETIMES 2. 0
NEVER/RARELY 3. 0	
Weekly leisure activity score = (9 × Strenuous) + (5 × Moderate) + (3 × Light)	

Results & Discussion

Patient	Date	EDSS Score	6MWT	Godin Leisure Activity	Berg Balance Assessment (BB)	Mini BESTest	Fatigue Severity Score (FSS)	Modified Fatigue Impact Scale (MFIS)
1	Aug- '17			9	36/56			
	Sept- '17		511 ft	40	43/56		63/63	49/84
	Feb- '18		680 ft	15	48/56		50/63	32/84
2	Dec- '17	2.5	816 ft	0		28/32	10/63	71/84
	Mar- '18	4.5	1424 ft	26		27/32	60/63	60/84
3	Sept- '17	5.5	1071 ft	0	44/56		15/63	
	Apr- '18	5.5	1713 ft	21	51/56			16/84
4	Nov- '17	6	1510 ft	9		30/32		
	Feb- '18	2.5	1652 ft	28		30/32	32/63	17/84

- An increase in activity level is not correlated with an increase in fatigue
- The EDSS score improved in 1/3 patients.
- The 6MWT improved in all (n=4/4) patients and corresponded with an increase in Godin Leisure Activity scores (n=4/4) and BB scores (n=2/2), while the Mini BESTest was unchanged (n=2/2).
- A subjective decrease in fatigue in both the FSS and MFIS was reported in 1/2 patients. In the other patient, a decrease in fatigue was only reported via the MFIS and not the FSS.
- While data are preliminary, it appears an increase in exercise may be associated with improved endurance and balance and reduced fatigue. We believe these positive outcomes likely reflect education on exercise, energy conservation, and activity modification that was provided by and reinforced by an interdisciplinary team
- Recurrent “maintenance visits” of PT and OT appear to be helpful in increasing patients activity/exercise level to help manage fatigue through this exploratory research.

References

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