

Functional Impact of Interactive Metronome© (IM)
on a
60 Year Old Male with Parkinson's Syndrome

HISTORY:

S.H. is a 60 year old male with a five year history of Parkinson's Disease. His chief complaint is impaired movement, shuffling and unsteady gait, fatigue, "weak voice", and poor fine motor skills in the hands. He feels his symptoms are slowly worsening.

OBSERVATIONS:

S.H. walks with a festinating (1), wide based gait. He cannot run.

(1) Festinating Gait - A gait in which the trunk is hunched over; the hips and knees bent; steps are short and become progressively more rapid until the subject has to stop to avoid falling forward.

His movements are slow and stiff.

There is no trunk rotation during ambulation

His voice is of low volume and raspy.

ASSESSMENT:

IM Long Form Assessment (see Table 1)

Functional Assessment:

Baseline measurements:

Balance was tested by timing the following activities (seconds before losing balance).

Standing, feet together, eyes open

Standing, feet together, eyes closed

Standing, right foot, eyes open

Standing, right foot, eyes closed

Standing, left foot, eyes open

Standing, left foot, eyes closed

Agility was tested by walking a 20' x 1.5" tape line (number of steps before stepping off line):

Normal stride

Heel-to-toe

TREATMENT:

S.H. was seen five days a week for three weeks for IM training . He completed 60,000 repetitions in the three week protocol. No other treatment intervention was provided. He was asked to continue his normal activities of daily living - unaltered (no additional exercise, walking, etc.).

OUTCOME:

Improvement in IM Scores as documented in Table 1.

Improvement in Functional Tests as documented in Table 2.

TABLE 1.

Percent change in Long Form Assessment Scores 06-26-07 to 07-20-07

Ex.	Task Average %	Super Right On %
1	82	1150
2	73	571
3	81	100
4	77	325
5	68	190
6	56	833
7	79	100
8	55	175
9	39	59
10	70	100
11	72	100
12	37	143
13	53	130
14	77	164

TABLE 2.

	Initial	Final	1 mo.
Standing, feet together, eyes open	>60 sec.	>60 sec.	>60 sec.
Standing, feet together, eyes closed	>60 sec.	>60 sec.	>60 sec.
Standing, feet together, eyes open on trampoline	17 sec.	>60 sec.	>60 sec.
Standing, feet together, eyes closed on trampoline	3 sec.	>60 sec.	>60 sec.
Standing, right foot, eyes open	7 sec.	14 sec.	15 sec.
Standing, right foot, eyes closed	5 sec.	10 sec.	10 sec.
Standing, left foot, eyes open	0 sec.	5 sec.	43 sec.
Standing, left foot, eyes closed	0 sec.	3 sec.	11 sec.
Tape line normal stride	10 steps	>100	>100 steps
Heel-to-toe	5 steps	>100	>100 steps
Placing washer on dowel tree with dominant hand (1 min.)	12	22	20

S.H. reported he felt like had made no significant improvements; however, his wife reports significant improvement in gait, endurance walking, and overall movement. His 6 year old grandson observed "grampa, you're running" during a kick-ball game. He now walks more upright, with a normal stride and normal transfer of weight from heel-strike to toe-off. Speech was unaffected. A six month followup is planned.

DISCUSSION:

The rationale for using IM as a treatment modality for this patient was based on the hypothesis that, although it was not possible to halt or reverse the underlying pathology of Parkinson's Disease, it might be possible to "force" the establishment of new, more efficient synaptic links or to facilitate / strengthen existing pathways involved in motor planning and execution. As neuroscience technology advances, it is our hope that verification of this hypothesis will be possible. From a practical perspective, profound, objectively measured changes were observed at the completion of the three week protocol. Further gait training and upper limb fine motor skills remain to be addressed in subsequent treatment.