AN EXPERIMENTAL STUDY OF THE EFFECTIVENESS OF A TREATMENT ON MULTIPLE SCLEROSIS

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INTRODUCTION

This experiment in the field of medical research was conducted to observe the reactions of 43 patients subjected to a new method of treatment for multiple sclerosis. The study was designed to investigate severity of multiple sclerosis symptoms before and after treatment for multiple sclerosis.

The objectives of the statistical study were twofold - to evaluate the treatment's overall result from the degree of relief for the disease that the treatment produced - and to assess the effectiveness of the therapy in relieving specific symptoms of multiple sclerosis.

METHODOLOGY

The design of this survey followed the standard procedure of experimental design. Forty-three victims of multiple sclerosis were diagnosed for the severity of the disease and for the severity of specific symptoms associated with the disease. The new treatment for multiple sclerosis was administered in a uniform way. The only variations in the administration of treatment were a function of number of applications, place of administration, and directness vs. indirectness of treatment. After treatment, the response to therapy was evaluated on the basis of overall recovery and alleviation of specific symptoms.

Specific statistical procedures worsoused in the course of defining the symptomatology and evaluating therapeutic success that should be reviewed here. In all, patients were diagnosed on symptoms. The statistics were used to learn to what extent symptoms occur together in multiple sclerosis, forming patterns or medical syndromes. Beyond this, the condition of patients on the grouped symptoms was defined by combining scores for the severity of their problems on the correlated symptoms. Two statistical methods were used in this analysis of patterns of multiple sclerosis symptomatology.

1. Correlation Analysis

The Phi Coefficient was used to measure the extent to which two symptoms occur together. The significance of correlation depends on the difference of the product values, AD - BC, where AD represents mutual presence and mutual absence of two symptoms, and BC the absence of one symptom by the presence of the other symptom as a second value. As the coefficient approaches unity, the more perfect the correlation, indicating that most patients who have one symptom also have the second. Coefficients of correlation were computed for every combination of symptoms.

2. Cluster Analysis

The cluster analysis technique essentially builds on correlational values, establishing groups of concurrent symptoms. The cluster defines the syndrome that is emerging. The B coefficient or the coefficient of "belonging", is the ratio of symptoms in t

in the cluster to the symptoms not included. A significant decrease in the B coefficient indicates that the added symptom, selected on the basis of next highest correlation coefficients, does not "belong" to the syndrome. It warrants ending the cluster. A cluster, then, is a combination of symptoms that have the greatest tendency to occur together, or constitute a syndrome. Analysis showed the presence of eight such syndromes and six separate residual symptoms that did not group together in any way.

3. Final Ratings on Pre and Post Severity of Symptoms in Syndromes.

Patient's scores on groups of symptoms were used to establish a "percentage of severity". Obtaining these scores involved the simple procedure of dividing the number of symptoms evidenced by patients in a syndrome by the total possible number of symptoms.* Those patients who had 50 to 90% of the symptoms were considered as showing "some severity", while those with 0 to 40% were classified as having "little or not problem".

By defining the patient's symptom and syndrome severity scores for both pre and post treatment, it is possible to determine the degree of relief or success for each syndrome-symptom.

*The patient's syndrome score is used to refer to a summary measurement of the extent to which his condition is severe on a combination of correlated symptoms.

FINDINGS

Diagnosis of Symptom Groups for Multiple Sclerosis

The broad empirical groupings of multiple sclerosis symptoms that derive statistically provide syndromes of description for this disease that run fairly parallel to a priori medical classifications. The following pattern for symptomatology emerges when studying the combinations of symptoms that group together:

First, 24 groups of symptoms collapse into eight syndromes or basic dimensions for the disease.

Syndromes (8)*	Symptoms (24)
1. Upper Extremity weakness	Weakness (Upper Extremity) Atactic Movement (Upper extremity)
2. Restriction	Restricted Moderately Restructed
3. Visual Disturbance	Visual Disturbance Blurred or double vision Temporal pallor Disturbance of equilibrium
4. Immobility	Partial paralysis Immobile at home Bedridden Immobility through paralysis
5. Depression	Depressed Headaches

*The syndrome "name" emerges empirically from inspecting the specific symptoms that group together.

6.	Muscular Disorders	Muscle weakness Bladder Disturbance
7.	Physical Agitation	Spastic-Upper extremities Spastic Gait-Lower extremities Anxious Immobility (through spasticity) Tremor Agitated
8.	Lower Extremity Weakness	Retrobulbar Disturbance Weakness (Lower extremities)

Finally, six initial symptoms remain independent from the clustering into syndromes, such that they must be reported as separate dimensions when evaluating success of the therapy in terms of patient response.

Overall Success of Therapy

The success of this therapy is dramatically revealed in the amount of relief that the treatments give to treatment before vs. after treatment administration. The initial severity of symptom averaged at 1.2 prior to therapy, in a scale where 0 to 2 moves in the direction of expression of greatest severity. The average severity for symptoms reduces to .3 after administration, a sizeable drop that cannot be dismissed as a chance occurance within the normal limits of statistical probability. As multiple sclerosis patients usually do not improve, other than when some form of remission occurs, it can be assumed that recovery is traceable to the effectiveness of therapy in the framework of this experimental design.

Therapeutic Success with Specific Symptoms

An investigation of the relative effectiveness of this treatment on types of symptoms may prove worthwhile.

The treatment for multiple sclerosis demonstrated greatest effectiveness in reducing the occurrence of numbness, restriction, ataxic gait (lower extremity), upper extremity weakness, depression, and muscular disorders.

The treatment introduced a negligible effect on disability, physical agitation, speech disturbance and immobility. However, these symptoms rarely occurred in these cases with any acute severity. Thus, the value of the treatment in curing these symptoms was not legitimately tested in this experiment. Insofar as these symptoms are actual, frequent, and important aspects of multiple sclerosis, further work must be done with patients, more disturbed by these problems, before judging the value of the treatment as a remedy for them.

Neurosis becomes the one area of symptomatology that occurs acutely, in a fashion that seems intrinsic to the disease, where the therapy made little, if any, contribution toward cure.

Therapeutic Success by Sample Characteristics

Conceivably the therapy could be more effectiveness for some groups than others; it might be more effective under some conditions than others. Thus, variation in therapeutic success was tabulated by:

- Overall response to treatment
- Number of home administrations
- Number of office administrations
- Time lapse between first symptom and visiting the doctor
- Age at onset of first symptom
- Sex

The overall response to treatment, as a summary medical rating of therapeutic success, showed a high reliability when compared with the specific recovery on individual symptoms. Patients rated as having and "excellent" response evidenced the greatest change in symptom relief. Patients rated as having a "fair" response showed least improvement in areas of specific symptoms.

Neither the number of home administrations, nor the number of office administrations affected the course of recovery. Improvement was equally likely whether therapy occurred frequently or infrequently at these locations. However, this finding may be deceptive. If frequency of home and office administrations are negatively correlated (as they well might be) then this tabulation has not yet controlled for the total frequency of administration of therapy for the patients. Total number of administrations may still have an influence on therapeutic success.

The length of time that patients have multiple sclerosis does have a definite relationship with the extent of recovery.

The shorter the time lapse between the first symptom of the disease and visiting the doctor, the more likely the cure.

Finally, neither sex nor age at the onset of the disease are related to therapeutic success.

TABLE 1

SAMPLE DESCRIPTION

SEX	n	%
Total	43	100%
Male	19	44
Female	24	56

AGE AT FIRST SYMPTOM OF M.S.	n	%
Total (12-39)	43	100%
Young (12-21)	13	30
Average (22-26)	14	33
Old (27-39)	16	37

TIME LAPSE (Between first symptom and MD visit)		
Total (1-34 yrs)	43	100%
Short (1-5)	13	30
Average (6-18	15	35
Long (19-34)	15	35

MODE OF TREATMENT		
Total	43	100%
Direct	38	88
Indirect	3	7
Outside U.S.	2	5

NUMBER OF HOME ADMINISTRATIONS		
Total (0-520)	43	100%
Infrequent (0-49)	14	32
Average (50-139)	15	35
Frequent (140-520)	14	32

NUMBER OF OFFICE ADMINISTRATIONS		
Total (0-208)	43	100%
Infrequent (0-8)	15	35
Average (9-19)	11	25
Frequent (21-208)	17	39

RESPONSE TO TREATMENT		
Total	43	100%
Excellent	13	30
Good	22	51
Fair	8	19

REMISSION		
Total Sample	43	100%
Total Remission	1	2
Partial	9	21
Slow Onset	11	25
Not Remission*	15	35
Not Ascertained	7	16

*Includes all those who showed both complete and partial remission.

TABLE 2

SUMMARY OF SEVERITY OF MULTIPLE SCLEROSIS SYMPTOMS
BEFORE AND AFTER THE TREATMENT OF MULTIPLESSCLEROSIS

SYMPTOMS	SEVERITY* Pre	SEVERITY* Post	ORDER OF ALLEVIATION
BASE	43	43	
Numbness	1.9	0.3	1
Restriction	1.8	0.7	5
Ataxic Gait (Lower extremity)	1.7	0.1	2
Neurotic	1.7	1.4	12
Upper extremity weakness	1.5	0.0	3
Depression	1.3	0.0	4
Muscular disorders	1.2	0.1	6
Visual disturbances	1.1	0.0	7
Lower extremity weakness	1.1	0.1	9
Vertigo	1.0	0.0	8
Disability	0.9	0.9	14
Physical agitation	0.6	0.0	10
Speech disturbances	0.4	0.0	11
Immobility	0.3	0.0	13
AVERAGE	1.2	0.3	

*Severity scores range from 2.0 as most severe to 0.0 indicating little, if any, problems.

TABLE 2a

SUMMARY OF MULTIPLE SCLEROSIS SYMPTOMS
BY RANGE OF SEVERITY (PERCENTAGES)

SYMPTOM		SEVERE PROBLEM	SOME PROBLEM	LITTLE OR NO PROBLEM	NOT ASCE... TAINED
Numbness	Pre	95	-	5	
	Post	16	-	84	
Restriction	Pre	80	2	9	
	Post	21	33	40	
Atactic Gait (Lower Extremity	Pre	88	-	12	8
	Post	5	-	90	5
Neurotic	Pre	68	-	30	2
	Post	42	-	56	2
Upper extremity weakness	Pre	72	5	23	
	Post	-	-	100	
Depression	Pre	53	19	28	
	Post	-	2	93	
Muscular Disorders	Pre	49	26	23	2
	Post	2	5	91	2
Visual Disturbances	Pre	46	21	26	7
	Post	-	2	86	12
Lower extremity weakness	Pre	12	88	-	
	Post	-	12	88	
Vertigo	Pre	49	-	42	9
	Post	-	-	88	12
Disability	Pre	46	-	49	5
	Post	48	-	49	3
Physical Agitation	Pre	5	48	47	
	Post	-	2	98	
Speech Disturbances	Pre	21	-	79	
	Post	-	-	100	
Immobility	Pre	12	10	78	
	Post	-	-	100	

TABLE 3

PRE AND POST SEVERITY OF MULTIPLE SCLEROSIS SYMPTOMS
BY RESPONSE TO TREATMENT

SYMPTOM BASE: 42	RESPONSE					
	EXCELLENT 13		GOOD 22		FAIR 8	
	Pre	Post	Pre	Post	Pre	Post
Numbness	2.0	0.0	1.8	0.3	2.0	1.0
Restriction	1.7	0.2	1.8	0.8	2.0	1.5
Atactic Gait (Lower Extremity)	1.5	0.0	1.8	0.2	1.5	0.0
Neurotic	2.0	1.5	1.0	0.4	1.3	1.0
Upper Extremity Weakness	1.4	0.0	2.0	0.0	2.0	0.0
Depression	1.5	0.0	1.0	0.0	1.1	0.1
Muscular Disorders	1.0	0.0	1.3	0.1	1.4	0.3
Visual Disturbances	1.3	0.0	1.1	0.0	1.0	0.1
Lower Extremity Weakness	1.2	0.0	1.1	0.1	1.0	0.4
Vertigo	1.5	0.0	0.8	0.0	0.5	0.0
Disability	0.2	0.2	1.1	1.1	1.8	1.3
Physical Agitation	0.6	0.0	0.5	0.0	0.8	0.0
Speech Disturbances	0.2	0.0	0.4	0.0	1.0	0.0
Immobility	0.4	0.0	0.3	0.0	0.3	0.0
AVERAGE	1.2	0.1	1.1	0.2	1.3	0.4

TABLE 4

PRE AND POST SEVERITY OF MULTIPLE SCLEROSIS SYMPTOMS
BY NUMBER OF HOME ADMINISTRATIONS

SYMPTOM BASE: 43	NUMBER OF HOME ADMINISTRATIONS (0–10) INFREQUENT 14		(50–100) AVERAGE 15		(110–200) FREQUENT 13	
	Pre	Post	Pre	Post	Pre	Post
Numbness	2.0	0.4	1.7	0.3	2.0	0.3
Restriction	1.8	0.3	1.6	0.7	2.0	0.9
Atactic Gait (Lower extremity)	1.4	0.0	1.6	0.1	1.0	0.1
Neurotic	1.3	0.7	1.2	0.4	1.6	1.4
Upper extremity weakness	1.4	0.0	1.4	0.0	1.6	0.0
Depression	1.4	0.0	2.2	0.1	1.5	0.0
Muscular Disorders	1.6	0.3	1.1	0.0	1.1	0.0
Visual Disturbances	1.4	0.1	0.3	0.0	1.3	0.0
Lower Extremity Weakness	1.1	0.1	1.1	0.1	1.2	0.1
Vertigo	1.0	0.0	0.5	0.0	1.1	0.0
Disability	1.1	1.1	0.9	0.9	0.7	0.7
Physical Agitation	0.6	0.0	0.2	0.0	0.9	0.1
Speech Disturbances	0.7	0.0	0.4	0.0	0.1	0.0
Immobility	0.5	0.0	0.2	0.0	0.3	0.0
AVERAGE	1.3	0.2	1.1	0.2	1.2	0.3

TABLE 5

PRE AND POST SEVERITY OF MULTIPLE SCLEROSIS SYMPTOMS
BY NUMBER OF OFFICE ADMINISTRATIONS
OF TREATMENT

SYMPTOM BASE: 43	NUMBER OF OFFICE ADMINISTRATIONS (0-8) INFREQUENT 15		(9-19) AVERAGE 11		(21-208) FREQUENT 17	
	Pre	Post	Pre	Post	Pre	Post
Numbness	1.9	0.4	1.8	0.4	2.0	0.2
Restriction	1.7	0.7	1.6	0.9	2.0	0.6
Atactic Gait (Lower Extremity)	1.6	0.1	1.3	0.2	2.0	0.0
Neurotic	1.3	0.3	1.5	0.5	1.9	1.5
Upper Extremity Weakness	1.9	0.0	0.7	0.0	1.6	0.0
Depression	0.7	0.0	1.4	0.0	1.6	0.0
Muscular Disorders	1.2	0.1	1.2	0.2	1.3	0.1
Visual Disturbances	0.8	0.0	1.3	0.0	1.4	0.0
Lower Extremity Weakness	1.0	0.1	1.1	0.2	1.2	0.0
Vertigo	0.4	0.0	1.1	0.0	1.4	0.0
Disability	1.1	1.1	0.9	0.9	0.8	0.8
Physical Agitation	0.5	0.0	0.4	0.0	0.8	0.0
Speech Disturbances	0.5	0.0	0.7	0.0	0.1	0.0
Immobility	0.0	0.0	0.4	0.0	0.5	0.0
AVERAGE	1.0	0.2	1.1	0.2	1.3	0.2

TABLE 6

PRE AND POST SEVERITY OF MULTIPLE SCLEROSIS SYMPTOMS
BY TIME LAPSE BETWEEN FIRST SYMPTOM & MD VISIT

	TIME LAPSE					
	Short 313 (1-5)		Average 15 (6-18)		Long 15 (19-34)	
SYMPTOM BASE: 43	Pre	Post	Pre	Post	Pre	Post
Numbness	1.8	0.2	1.9	0.3	2.0	0.5
Restriction	1.5	0.5	1.8	0.7	2.0	1.1
Atactic Gait (Lower extremity)	1.7	0.2	1.7	0.0	1.6	0.1
Neurotic	1.1	0.6	1.3	1.2	1.6	0.7
Upper extremity weakness	1.4	0.0	1.7	0.0	1.3	0.0
Depression	1.1	0.0	1.5	0.1	1.2	0.0
Muscular Disorders	0.8	0.0	1.3	0.1	1.5	0.2
Visual Disturbances	0.8	0.1	1.4	0.0	1.1	0.0
Lower extremity weakness	1.2	0.1	1.1	0.0	1.1	0.3
Vertigo	0.9	0.0	1.3	0.0	0.7	0.0
Disability	0.5	0.5	1.1	1.1	1.2	1.2
Physical agitation	0.5	0.1	0.7	0.0	0.5	0.0
Speech Disturbances	0.6	0.0	0.6	0.0	0.4	0.0
Immobility	0.0	0.0	0.4	0.0	0.5	0.0
AVERAGE	1.0	0.2	1.3	0.3	1.2	0.3

TABLE 7

PRE AND POST SEVERITY OF MULTIPLE SCLEROSIS SYMPTOMS BY AGE AT FIRST SYMPTOM

	AGE AT FIRST SYMPTOM					
	YOUNG (12 - 21)		AVERAGE (22 - 28)		OLD (29 - 39)	
	12		12		16	
SYMPTOM BASE: 68	Pre	Post	Pre	Post	Pre	Post
Numbness	2.0	0.5	2.3	0.3	1.9	0.2
Restriction	2.0	1.0	1.3	0.8	1.6	0.6
Ataxic gait (lower extremity)	1.3	0.2	1.8	0.2	1.4	0.0
Neurotic	1.1	0.3	1.3	1.2	1.0	1.0
Upper extremity weakness	1.2	0.0	2.0	0.0	1.3	0.0
Depression	1.2	0.0	1.4	0.0	1.2	0.0
Muscular disorders	1.4	0.0	1.2	0.3	1.2	0.0
Visual disturbances	0.8	0.1	1.4	0.0	1.2	0.0
Lower extremity weakness	1.0	0.2	1.3	0.2	1.1	0.0
Vertigo	0.0	0.0	1.2	0.0	0.9	0.0
Disability	1.1	1.1	0.8	0.8	0.8	0.8
Physical Agitation	0.8	0.1	0.8	0.0	0.0	0.0
Speech disturbances	0.3	0.0	0.3	0.0	0.4	0.0
Immobility	0.2	0.0	0.6	0.0	0.3	0.0
AVERAGE	1.1	0.2	1.3	0.3	1.1	0.2

TABLE 8

PRE AND POST SEVERITY OF MULTIPLE SCLEROSIS SYMPTOMS BY SEX

SYMPTOM BASE: 43	SEX			
	MALE 19		FEMALE 24	
	Pre	Post	Pre	Post
Numbness	1.8	0.2	2.0	0.4
Restriction	1.7	0.7	1.9	0.8
Atactic Gait (Lower extremity)	1.9	0.2	1.5	0.0
Neurotic	1.3	0.6	1.4	1.0
Upper extremity weakness	1.4	0.0	1.6	0.0
Depression	1.1	0.1	1.3	0.0
Muscular disorders	1.1	0.1	1.3	0.1
Visual Disturbances	1.1	0.0	1.2	0.0
Lower extremity weakness	1.2	0.1	1.0	0.2
Vertigo	1.2	0.0	0.8	0.0
Disability	0.7	0.7	1.1	1.1
Physical agitation	0.4	0.1	0.7	0.0
Speech disturbances	0.5	0.0	0.3	0.0
Immobility	0.3	0.0	0.3	0.0
AVERAGE	1.1	0.2	1.2	0.3

TABLE 3

CLUSTER ANALYSIS OF SYMPTOMS IN MULTIPLE SCLEROSIS

	Mean Inter-correlation In Cluster	Mean of Re-maining Items Correlation	[illegible]
CLUSTER 1: UPPER EXTREMITY WEAKNESS			
40 Weakness (Upper extremity)	.880	.172	[illegible]
42 Muscle Coverage (Upper extremity)			
CLUSTER 2: RESTRICTION			
31 Restricted			
32 Moderately restricted	.880	.218	[illegible]
CLUSTER 3: VISUAL DISTURBANCE			
34 Visual Disturbances	.750	.253	[illegible]
35 Blurred or double vision			
31 Temporal Pallor	.648	[illegible]	[illegible]
30 Disturbance of Equilibrium	.630	[illegible]	[illegible]
CLUSTER 4: MOBILITY			
28 Partial Paralysis	.780	[illegible]	
36 Immobile at home			
34 Bedridden	.690	[illegible]	
30 Immobility through paralysis	.603	[illegible]	
CLUSTER 5: DEPRESSION			
26 Depressed	.000	[illegible]	[illegible]
32 Headache			
CLUSTER 6: MUSCULAR DISORDERS			
33 Muscle Weakness			
29 Bladder Disturbance	.550	.157	[illegible]
CLUSTER 7: AGITATION			
41 Spastic - upper extremities			
37 Spastic Gait (Lower extremities)	.550	.252	[illegible]
38 Ataxia	.480	.324	[illegible]
39 Immobility through spasticity	.300	.218	[illegible]
43 Tremor	.261	.206	[illegible]
27 Agitated	.317	.194	[illegible]
CLUSTER 8: LOWER EXTREMITY WEAKNESS			
36 Retrobulbar Disturbances	.480	.144	[illegible]
44 Weakness (Lower extremity)	[illegible]	[illegible]	[illegible]

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INTERCORRELATION MATRIX OF INCIDENCE OF MULTIPLE SCLEROSIS
SYMPTOMS PRIOR TO TREATMENT FOR MULTIPLE SCLEROSIS

SYMPTOM	40	42	51	52	34	35	31	30	43	53	54	50	23	32
Weakness(Upper Extremity) 40	-	.38	.01	-.03	-.18	-.23	-.26	.15	.26	.23	.06	.20	-.01	-.01
Atactic Movement(Upr.Ext) 42		-	.16	.09	.11	-.17	-.25	.27	.30	.32	.10	.25	-.03	.03
Restricted 51			-	.88	.32	.32	.39	.39	.15	.16	.13	.19	.13	.50
Moderately Restricted 52				-	.36	.24	.40	.29	.16	.18	.14	.03	.23	.29
Visual Disturbances 34					-	.75	.64	.57	.23	.37	.23	.32	.02	.44
Blurred or double Vision 35						-	.54	.56	.28	.31	.26	.37	.19	.55
Temporal Pallor 31							-	.72	.16	.39	.23	.12	.11	.25
Disturbance of Equilibrium 30								-	.25	.23	.10	.36	-.03	.27
Partial Paralysis 43									-	.78	.07	.51	.19	.30
Immobile at Home 53										-	.02	.48	.23	.35
Bedridden 54											-	.53	.13	.30
Immobility thru Paralysis 50												-	-.07	.19
Depressed 23													-	.00
Headache 32														-
Muscle Weakness 38														
Bladder Disturbance 39														
Spastic(Upper Extremities) 41														
Spastic Gait (Low.Extr.) 47														
Anxious 23														
Immobility thru Spasticity 49														
Tremor 46														
Agitated 29														
Retrobulbar Disturbances 36														
Weakness (Lower Extremity 44														

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(Continued)

INTERCORRELATION MATRIX OF INCIDENCE OF MULTIPLE SCLEROSIS SYMPTOMS WHICH TO DISTINGUISH FOR MULTIPLE SCLEROSIS

SYMPTOM		38	39	41	47	28	49	46	29	36	44
Weakness(Upper Extremity)	40	.21	-.01	.51	.36	.28	.31	.12	.05	.19	-.03
Atactic Movement (Upr.Ext.)	42	.14	.09	.48	.14	.30	.26	.20	-.02	.10	-.10
Restricted	51	.01	.16	.30	.18	.27	.27	.27	.13	.11	-.05
Moderately Restricted	32	-.04	.06	.33	.25	.18	.23	.15	.21	-.13	.42
Visual Disturbances	34	-.41	-.15	.16	-.12	.09	.02	-.01	.29	.29	.10
Blurred or Double Vision	35	-.10	-.04	.25	-.12	.11	.11	.09	.33	.33	-.11
Temporal Pallor	31	-.27	.05	.13	-.05	.16	.03	-.29	.69	.03	.27
Disturbance of Equilibrium	30	-.03	.19	.39	.12	.32	.39	.03	.24	.30	-.13
Partial Paralysis	43	.27	.21	.51	.36	.24	.01	.23	.01	-.14	.07
Immobile at Home	53	.13	.03	.44	.15	.15	.20	.09	.12	-.16	.03
Bedridden	54	.07	.15	.30	.18	.16	.23	.15	.09	-.12	.06
Immobility thru Paralysis	50	.21	.49	.31	-.03	.10	-.16	.34	.05	.02	-.26
Depressed	25	.23	.16	.51	.18	.15	.18	.01	.25	.04	.23
Headache	32	-.04	-.01	.50	.09	.09	.02	.02	.42	.13	.19
Muscle Weakness	28	-	.55	.40	.48	.28	.34	.36	-.11	.00	-.09
Bladder Disturbance	39		-	.12	.16	.15	.26	.19	-.13	.03	-.16
Spastic (Upper Extremities)	41			-	.51	.48	.44	.32	.39	.21	.14
Spastic Gait (Lower Ext.)	47				-	.39	.29	.32	.24	-.17	.17
Anxious	28					-	.23	.10	.30	.26	-.12
Immobility thru Spasticity	49						-	.44	.04	-.13	.09
Tremor	46							-	.13	.26	-.19
Agitated	29								-	.00	.09
Retrobulbar Disturbances	36									-	.43
Weakness (Lower Extremity)	44										-