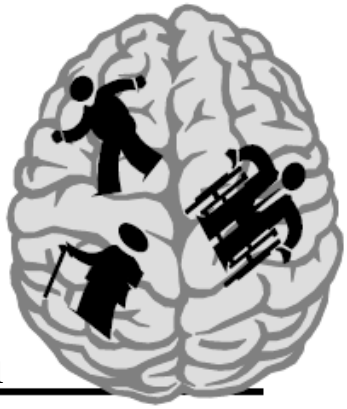
Degenerative Diseases



Fall 2009 Volume 9 Issue 1

Newsletter of the Degenerative Diseases Special Interest

A Message from the Chairperson

Hello Everyone!

I hope you are enjoying the fall season. I'd first like to extend my sincere thanks to Robbin Howard for her dedication and outstanding contributions to the DDSIG. For the past four years she served as the Secretary and did a superb job. I also want to extend a warm welcome and congratulations to Deb Kegelmeyer who was elected to the DDSIG Nominating Committee. Congratulations are also in order to Evan Cohen who is the newly elected DDSIG Secretary and continues as the Newsletter Editor. As we join with other Executive Committee members Donna Fry (Vice Chair), Daniel White (Nominating Committee Chair) and Kirk Personius (Nominating Committee), I look forward to an exciting and productive year ahead.

I hope that you find the articles in this newsletter informative for your practice. The article entitled "Toolbox of Outcome Measures for Individuals with MS" is the second in our series of "toolbox" articles highlighting each of the major neurodegenerative diseases. Cindy Gibson-Horn has written a critique of an article entitled "The effect of functional electrical stimulation on the physiological costs of gait in people with multiple sclerosis".

The DDSIG programming at APTA conferences continues to be great. Many thanks to Robbin Howard, Julie Hershberg, Evan Cohen, and Richard Briggs for their outstanding presentations at CSM 2009! Looking ahead we are very pleased to offer a presentation by Becky Farley on "An intensive whole body deficit-targeted exercise approach for people with Parkinson's disease – LSVT® BIG" at next year's business meeting. In addition, Deb Kegelmeyer and I will lead a roundtable discussion on "Community -Based Health Promotion Exercise Programs for Individuals with Neurodegenerative Diseases."

Be sure to check out our DDSIG website which has many new degenerative disease-related updates and resource materials. We welcome your ideas and suggestions for ways that the DDSIG can best serve you. If you'd like to get more involved in the SIG, consider writing an article for the newsletter or running for an office. Working together we can achieve our goal to provide all people with neurodegenerative diseases high quality physical therapy care that is based on the best evidence.

Enjoy the rest of 2009,
Anne

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Combined Sections Meeting 2009
Las Vegas, Nevada

DDSIG Programming at CSM 2009

The DDSIG again provided some excellent programming at CSM 2009. Our own Robbin Howard, along with Julie Hershberg presented on "Use of Clinical Decision Making Frameworks to Guide Examination and Intervention with Neurodegenerative Disease: A Presentation of Selected Cases" at the DDSIG business meeting.

The DDSIG Roundtable this year was entitled "Dimensions of Care for People with Neurological Terminal Illness" and was co-led by our own Evan Cohen and Rich Briggs, Chair of the Oncology Section's Hospice and Palliative Care SIG.

The DDSIG would like to extend its thanks to all of these presenters for continuing to further the SIG's mission to share the best current knowledge about the PT management of individuals with neurodegenerative disease.

Combined Sections Meeting 2010
San Diego, California

DDSIG Programming at CSM 2010

The DDSIG is excited to announce some excellent programming for CSM 2010.

Becky G. Farley, PT, MS, PHD is scheduled to present at the DDSIG business meeting. Becky will be presenting "An intensive whole body deficit-targeted exercise approach for people with Parkinson's disease – LSVT® BIG".

Our own Anne Kloos, PT, PhD, NCS and Deb Kegelmeyer PT, DPT, MS, GCS will be hosting the SIG Roundtable entitled "Community-Based Health Promotion Exercise Programs for Individuals with Neurodegenerative Diseases".

The SIG leadership is thrilled that Becky, Anne and Deb will be sharing their expertise in the rehabilitation of individuals with neurodegenerative diseases. We hope to see you in San Diego!

Toolbox of Outcome Measures of Individuals with Multiple Sclerosis

Amy Yorke, PT, MPT, NCS, Instructor and Assistant Director of Clinical Education
University of Michigan-Flint, Donna Fry, PT, PhD Professor and Director University of Michigan-Flint

Multiple sclerosis (MS) is a progressive disorder of the central nervous system affecting both white and gray matter.[1] MS is classified into four categories based on disease progression: 1) relapsing-remitting MS (RRMS), 2) secondary-progressive MS (SPMS), 3) primary progressive MS (PPMS), and 4) progressive-relapsing MS (PRMS). Rate of disease progression and type of impairments manifested varies widely from case to case and is dependent on location of lesions within the CNS. Common impairments include muscle weakness, spasticity, visual disorders, sensory loss, fatigue, and balance deficits. These impairments often lead to disability and affect participation in the community. Thus, physical therapy examination of a patient with multiple sclerosis often includes a wide variety of tests that address impairments, disability, and community participation.

Physical therapists utilize the Patient/Client Management Model outlined in the *Guide to Physical Therapist Practice*.[2] This model outlines a process that provides the physical therapist a framework to provide comprehensive care. The steps of the model include Examination, Evaluation, Diagnosis, Prognosis, Intervention, and Outcomes. Patients with multiple sclerosis fall under the Neuromuscular Practice Pattern 5E: Impaired Motor Function and Sensory Integrity Associated with Progressive Disorders of the Central Nervous System. Presentation of the disorder varies widely between patients. A physical therapist may provide services to a person with MS intermittently over the course of several years as the disease progresses. The examination process (including the selection of tests and measures) used by the physical therapist must be individualized to serve the needs of the individual with multiple sclerosis at the current time. Re-examination using standard outcome measures will allow the physical therapist to make judgments on the effectiveness of treatment and/or the progression of the disease process. Tests and measures should include those at the level of body functions and structure (impairments), activity limitations, and participation restrictions according to the International Classification of Function, Disability, and Health (ICF).[3] There are numerous tools that a physical therapist can use when assessing someone with MS (Table 1).

Broad disability measures are commonly used to classify extent of disability in people who have MS. The Expanded Disability Status Scale (EDSS) utilizes a standardized neurologic exam called the Functional System Scores (FSS) combined with assessment of gait function to determine an overall disability level.[4] The EDSS is considered the gold standard for disability level classification of MS though it is heavily weighted by gait ability. More recently the Patient Determined Disease Steps (PDSS) was developed. The PDSS is easy to use, has high inter-rater reliability, and is strongly correlated with the EDSS.[5]

Resources for clinicians on clinical guidelines and measurement tools used for MS include the National Multiple Sclerosis Society (www.nmss.org) and the Consortium of Multiple Sclerosis Centers (www.mscare.org).

Specific tests and measures for patients with MS may include:

Aerobic Capacity and Endurance. Approximately 60-70% of people with MS are affected by persistent or intermittent fatigue.[6] The Multiple Sclerosis Council for Clinical Practice Guidelines[7] recommends use of the Modified Fatigue Impact Scale (MFIS) with a demonstrated Cronbach's alpha of 0.81.[8] The Fatigue Severity Scale (FSS), a 9-item questionnaire, is an alternative measure of fatigue with high internal consistency and good test-retest reliability.[9-11]

Anthropometric Characteristics. MS does not specifically cause anthropometric changes in the body; however, if a patient has a co-morbidity that results in anthropometric changes girth measurements and palpation may be used.

Arousal, Attention, and Cognition. Arousal and attention are rarely affected by MS, though 50-66% of people with MS have some level of cognitive involvement.[12] Cognitive involvement may include impairment in executive functions (problem solving, initiation, organization, planning), multitasking, perceptual skills, word finding, learning and memory, and information-processing speed.[13] The Minimal Assessment of Cognitive Function in MS (MACFIMS) addresses many aspects of cognitive dysfunction associated with MS, but the test is typically administered by a neuropsychologist.[14] The MS Neuropsychological Screening Questionnaire (MSNQ) is a brief 15 question self-administered alternative with sensitivity of 0.83 and specificity of 0.97.[15] Auditory information processing speed can be tested by the Paced Auditory Serial Addition Test (PASAT) which has good reliability in the MS population.[16] The Symbol Digit Modalities Test (SDMT) assesses cognitive dysfunction through matching of symbols and numbers. This easily administered paper test takes

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5 minutes to administer and is sensitive to cognitive dysfunction in MS.[17]

Circulation. Only limited studies are available on circulation in MS. Abnormal heart rate and blood pressure responses to exercise bike testing were noted in 16% of subjects with MS in a single study.[18] Orthostatic responses were noted in approximately 50% of subjects with MS in another study.[19] Thus, close monitoring of vitals during exercise and with body plane changes is recommended.

Cranial and Peripheral Nerve Integrity. Optic neuritis, which typically involves eye pain and blurring of central vision, occurs in approximately 65% of all people with MS at some time and is often the presenting symptom of MS.[20] Other visual symptoms are common either due to the optic neuritis or involvement of the cerebellar system. Thus, conducting a cranial nerve screen is recommended as a routine component of the PT exam. Impaired oculomotor function occurs in at least 75% of people with MS at sometime during the disease process and may include symptoms such as blurred vision, diplopia, reading fatigue, loss of stereopsis (depth perception), oscillopsia (stable objects in visual field appear to oscillate), poor visual acuity, dizziness, and loss of balance.[21] Tests of oculomotor mobility and visual acuity should be included in routine PT examinations.

Environmental, Home, and Work (Job/School/Play) Barriers. Due to the disabling nature of MS and its effect on mobility, vision, and cognition specifically, barriers that limit function within the home, work space, and community must be continually assessed.

Ergonomics and Body Mechanics. Assessment of the living and work area will provide the therapist the opportunity to make suggestions for improved safety and efficiency of movement.

Assessment of not only the patient's body mechanics but also the caregiver's body mechanics will ensure that both parties do not injure themselves when completing or assisting with activities of daily living.

Gait, Locomotion, and Balance. Due to sensory and motor impairments associated with MS, 75% of those with MS experience balance impairment even with their eyes open.[22] There are no tests of balance or gait specifically designed for people with MS. The Berg has established reliability in the MS population.[23] The Tinetti Gait and Balance Assessment is a 14 item test that incorporates measurements of balance and gait measures.[24] The sensory organization test by Neurocom is very sensitive to balance impairments in people with MS.[22] A variety of gait measures have been validated in the MS population including the Rivermead Visual Gait Assessment (RVGA)[25], Dynamic Gait Index[26], Six-minute walk test[27,28], and the Timed Up and Go (TUG).[23,29] Reliability of the Six-Minute Walk Test has been established in persons with MS.[27,28] A timed 25 foot walk test has been incorporated into the Multiple Sclerosis Functional Composite (MSFC) test. The timed 25 foot walk test has high inter- and intra-rater reliability[30] and a change of >20% indicates a functional change in gait speed.[31] Confidence in balance and gait activity is also important to measure. The Activities Based Confidence Scale (ABC) is valid for use in patients with MS.[22,27] The Modified Falls Efficacy Scale and the Dizziness Handicap Inventory have not been validated in the MS population, but may be of use.[32,33]

Integumentary Integrity. Direct involvement of the skin is not seen in MS. However, if sensory and or motor impairment is present, inspection of the skin for possible breakdown is indicated.

Motor function (Motor Learning and Motor Control). To assess upper extremity fine motor function, the 9 Hole Peg Test may be used. This is a brief, standardized quantitative test of UE function and is the second component of the Multiple Sclerosis Functional Composite. The 9 Hole Peg Test has been shown to have high inter-rater reliability and good test-retest reliability.[34] It has also demonstrated evidence for concurrent and convergent validity as well as sensitivity to detect minor impairments of hand function. If gait ataxia is present, gait coordination tests such as walking on a line, heel-to-toe walking, and walking between two lines 18" apart would be appropriate to use and record by counting the number of steps completed without error.

Muscle performance: To assess the muscle performance of someone with MS, a therapist may choose to complete a manual muscle test. The therapist needs to recognize that the results may be affected by the impact of spasticity on testing. Other tests that the therapist may use include grip and pinch strength which provide objective data for the hand, as well as a sit-to-stand test or functional stair test for lower extremity functional strength and power. The timed six repetition sit-to-stand test and a timed functional stair test where the patient ascends, turns, and descends a set of 4 steps are reliable tests in the MS population.[27]

Orthotic, Protective, and Supportive Devices. Due to muscle weakness, balance deficits, fatigue, and the presence of spasticity in many people with MS, various assistive gait devices and lower extremity orthotics are commonly used to support gait.

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Pain: Accurate pain assessment is essential when examining a person with MS. One of the easiest ways to assess pain is to use a Visual Analog Scale or the Numeric Rating Scale. In each of these scales, a patient would rate their pain on a 10 cm line or numerically 0 to 10 with 0 being no pain and 10 being intolerable pain. Besides the patient providing the therapist an intensity of the amount of pain, it is important that a clinician gathers qualitative descriptors such as the location, mechanisms (e.g. spasms versus neuropathic), duration, and provoking and alleviating factors. The Neuropathic Pain Scale (NPS) was originally developed to assess the quantitative and qualitative qualities of neuropathic pain.[35] The NPS has been shown to be a useful tool in the assessment of central neuropathic pain and potentially in the measurement of treatment outcomes in patients with MS.[36] The Pain Effects Scale (PES) is modified version of the pain scale contained in the Medical Outcomes Study. The PES provides an assessment of the ways in which pain and unpleasant sensations interfere with mood, ability to walk or move, sleep, work, recreation, and enjoyment of life. The PES is one of the components of the Multiple Sclerosis Quality of Life Inventory. It is a structured, self-report questionnaire that has demonstrated face validity.[37]

Posture: In patients with MS, posture can be assessed both statically and dynamically in both sitting and standing. If a patient spends the majority of their day sitting in their wheelchair, proper posture will be essential to maximize functional independence and prevent secondary impairments.

Psychological Function: Patients with MS experience depression at higher rates (25-54%) than the general population or patients with other neurologic disorders.[20,38] Rates of reported suicides range up to 15% of patients attending MS clinics.[39] Given the high rate of depression and suicide rates in the MS population it is important to screen for depression. The Goldman Consensus Statement on Depression in Multiple Sclerosis recommends using the Beck Depression Inventory with a cut-off score of 13. This cut-off score positively identifies approximately 70% of patients with MS who have significant depression. It is important to refer potentially depressed patients for appropriate follow-up care because depression negatively impacts quality of life, cognitive function, ability to work, and social/family support systems.[40]

Range of Motion: To assess range of motion, measurements can be taken with a goniometer. Measurements are important in order to note changes over time as well as to demonstrate improvements with treatment. Joint end-feel assessments and flexibility tests are also important to complete**.**

Reflex Integrity: Examining the deep tendon reflexes on a patient with MS gives the therapist an idea of the "excitability" of the nervous system. The existence of pathological reflexes (e.g. Babinski) that indicate corticospinal tract involvement may also assist the therapist when working with a patient before a definitive diagnosis of MS has been made. When assessing motor function in a person with MS, spasticity is a common impairment that impacts normal function. The modified Ashworth Scale was developed to assess hypertonicity of a

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Call for Nominations

The DD SIG wants YOU!

The Degenerative Diseases Special Interest Group is seeking nominations for two positions for the coming year: Vice Chair and Nominating Committee Member.

If you are interested, or know someone who is, please contact a member of the Nominating Committee

muscle group to passive movement. Grading is completed on a scale from 0 (no increase in muscle tone) to 5 (affected parts rigid in flexion or extension).[41] The Multiple Sclerosis Spasticity Scale-88 (MSSS-88) was designed to quantify the impact of spasticity on people with MS. This scale attempts to quantify the impact of spasticity in eight areas: muscle stiffness, pain and discomfort, and muscle spasms, ADL, walking and body movements, emotional health and social functioning.[42] The Spasm Frequency Scale is a self-report measure used to measure the number of spontaneous muscle spasms that occur over a one hour period.[43] These measures are different in their measurements of spasticity. While the modified Ashworth looks at spasticity with passive movement, the MSSS-88 attempts to quantify how the spasticity affects their daily life. The Spasm Frequency Scale attempts to quantify spasms that occur. The measure chosen to be used may be based on how the patient's motor function is affected by the spasticity.

Self-Care and Home Management. Increased fatigue levels, reduced muscle strength and coordination, and impaired cognitive function can all significantly impact self-care and home management. The Functional Independence Measure (FIM™) is a reliable tool to use in the MS population and is highly correlated with the EDSS.[44] The Multiple Sclerosis Functional Composite (MSFC) test consists of a 25 foot walk test, 9-hole peg test, and the Paced Auditory Serial Addition Test (PASAT). The MSFC is more sensitive to change than the EDSS and has good inter-rater and test-retest reliability.[45,46]

Sensory Integrity: Somatosensation is affected in at least 90% of people with MS sometime over the course of their disease.[47] Sensory examination should include tests of light touch, pin prick, hot/cold, and proprioception. Assessment of combined cortical sensations (sterognosis, graphesthesias) are also important to complete.*Ventilation and Respiration / Gas Exchange*. Respiratory muscles often become weak early in the disease process with MS resulting in decreased maximal inspiratory (MIP), expiratory pressures (MEP), and maximal ventilatory ventilation (MVV).[48-50] This has an indirect effect on both fatigue and voice control. Examination of MIP, MEP, and MVV should be included in a routine PT examination of people with MS.

Work, Community, and Leisure Integration. Multiple sclerosis symptoms can have a large impact on ability to function at home, work and in the community. Fatigue is listed as the most common cause of disability by the U.S. Social Security Administration.[51] Loss of income secondary to loss of work can significantly impact the standard of living for persons with MS.[52] Given these factors, it is important to include general health, community participation, and quality of life measures in a comprehensive PT examination of the patient with MS. The SF-36 derived from the General Health Survey of the Medical Outcomes Study is both reliable and valid to use in the MS population.[53] The SF-36 was incorporated into the Multiple Sclerosis Quality of Life-54 (MSQOL-54) which also exhibits good test-retest reliability and validity.[54] The Multiple Sclerosis-Quality of Life Inventory (MSQLI) has established validity in the MS population.[55]

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Contribute to your DDSIG!

Do you have any resources to share with our SIG? Home exercise materials, videos, books or even ideas for others to follow up with would help to advance our SIG and help our patients to achieve their goals!

Do you have ideas for a case study or a research project involving degenerative diseases? Contact us and we may be able to point you in the right direction regarding collaborators or other ideas!

Table 1: Toolbox for Outcome Measures for Individuals with Multiple Sclerosis (MS)

Category	Test or Measure
Disease specific tools	Expanded Disability Status Scale (EDSS)[4]; Patient Determined Disease Steps (PDSS)[5]
Aerobic Capacity and Endurance	Modified Fatigue Impact Scale[7-8]; Fatigue Severity Scale[9-11]
Anthropometric Characteristics	Girth measurements or palpation
Arousal, Attention, and Cognition	Minimal Assessment of Cognitive function in MS (MACFIMS)[14]; MS Neuropsychological Screening Questionnaire (MSNQ)[15]; Paced Auditory Serial Addition Test (PASAT)[16]; Symbol Digit Modalities Test (SDMT)[17]
Assistive, Adaptive, Orthotic, Protective, and Supportive Devices	Assess various equipment during functional use noting body alignment, energy expenditure, fatigue levels, and functional benefits
Circulation	Heart rate and rhythm; Blood pressure
Cranial and Peripheral Nerve Integrity	Full screen if any symptoms present, otherwise screen CN II– VI, light touch, sharp/dull, hot/cold
Environment, Home, and Work Barriers	Assess home, work, and community environments with attention to accessibility, safety, and energy conservation issues
Ergonomics and Body Mechanics	Assessment of ergonomic and body mechanical factors during functional activities in home, work, and community environments. Include assessment of care giver body mechanics when necessary.
Gait, Locomotion, and Balance	Ranchos Los Amigos Observational Gait Assessment; Rivermead Visual Gait Analysis (RVGA)[25;] Dynamic Gait Index[26]; Six Minute Walk Test[27,28]; Timed Up and Go (TUG) [23,29]; 25' Gait Speed [30,31]; Berg [23]; Tinetti[24]; Computerized Dynamic Posturography (Motor Control Test and Sensory Organization Test[22]); Modified Clinical Test for Sensory Interaction on Balance; Activities Based Confidence Scale [22,27]; Modified Falls Efficacy Scale[32]; Dizziness Handicap Inventory[33]
Integumentary Integrity	Skin inspection in any areas that contact orthotics or experience friction
Motor Function (Motor Learning and Motor Control)	9 Hole Peg Test[34]; Gait coordination (Line walking, Tandem walking, Walking between two lines)
Muscle Performance (Strength, Power, and Endurance)	MMT; Grip Strength; Pinch Strength; Sit-to-stand Test (5-6 repetitions)[27]; Functional Stair Test[27]
Pain	Visual Analog Scale (VAS); Numeric Rating Scale (NRS); Qualitative descriptors (Location, Mechanism, Duration, Provoking and alleviating factors); Neuropathic Pain Scale (NPS)[35,36]; MOS-Pain Effects Scale[37]
Posture	Assess alignment of spine and lower extremities statically and dynamically
Psychological Function	Beck Depression Inventory (BDI)[40]
Range of Motion	Passive and active range of motion; End feel; Muscle extensibility
Reflex Integrity	Deep tendon reflexes; Pathologic reflexes; Modified Ashworth Scale[40]; MS Spasticity Scale-88 (MSSS-88)[41]; Spasm Frequency Scale[42]
Self-Care and Home Management	Functional Independence Measure (FIM)[44]; Multiple Sclerosis Functional Composite (MSFC)[45,46]
Sensory Integrity	Proprioception; Vibration; Stereognosia or graphesthesia
Ventilation and Respiration / Gas Exchange	Maximal Inspiratory Pressure (MIP)[48-50]; Maximal Expiratory Pressure (MEP)[48-50]; Maximal Voluntary Ventilation (MVV)[48-50]
Work, Community, and Leisure Integration	Medical Outcomes Study, SF-36[53] ; Multiple Sclerosis Quality of Life-54 (MSQOL-54)[54]; Multiple Sclerosis Quality of Life-54 (MS-QLI)[55]

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Article Review by Cynthia Gibson-Horn, PT

Paul L., Rafferty D., Young S., Miller L., Mattison P., McFayden A. The effect of functional electrical stimulation on the physiological cost of gait in people with multiple sclerosis. *Multiple Sclerosis*. 2008; 14: 954-961

ABSTRACT:
OBJECTIVE: Functional electrical stimulation (FES) is used clinically in the management of drop foot in people suffering from neurological conditions. The aim of the study was to investigate the effects of FES, in terms of speed and physiological cost of gait, in people with multiple sclerosis (pwMS). METHODS: Twelve pwMS and 12 healthy matched controls walked at their own preferred walking speed (PWS) for 5 min around a 10 m elliptical course. Subjects with MS completed the protocol with and without using their FES. In addition, control subjects completed the protocol twice more walking at the same PWS of the pwMS to which they were matched. RESULTS: Wearing FES lead to a significant improvement in walking speed (0.49 ms^{-1} and 0.43 ms^{-1} with and without their FES respectively; P<0.001) and a significant reduction in the physiological cost of gait (0.41 mL min^{-1} kg^{-1} m^{-1} and 0.46 mL min^{-1} kg^{-1} m^{-1} with and without FES respectively; P=0.017) in pwMS. The speed of walking, oxygen uptake, and physiological cost were significantly different between pwMS and controls both at preferred and matched speeds. Although pwMS exhibit a higher physiological cost of walking, FES offers an orthotic benefit to pwMS and should be considered as a possible treatment option.

This article's specific aims were to compare the effect of functional electrical stimulation (FES) and no stimulation in people with multiple sclerosis (pwMS) on to gait speed, oxygen uptake, and the physiological cost of gait, and to compare these results to age- and gender-matched healthy controls.

Gait difficulty and fatigue are common complaints among pwMS, therefore this article is clinically relevant. People with MS walk slower, often scuff their feet and/or trip due to lack of dorsiflexion, possibly due to loss of range of motion, hypertonia, or weakness in the ankle. FES stimulates the muscles around the ankle to produce dorsiflexion and eversion, allowing foot clearance during the swing phase of gait. Since fatigue often negatively impacts functional abilities and quality of life in pwMS, finding interventions that decrease the physiological cost of gait is important.

Research questions were adequately tested in this study. Inclusion criteria were: age 18 to 65 years; absence of comorbidity that restricted gait; be users of FES for at least siz months; and be able to walk continuously for five minutes with or without a walking aid. The pwMS were randomized to either FES on or off conditions. Both the pwMS and healthy controls were asked to walk at comfortable gait speeds. In order to better compare the results, individuals in the control group also walked at speeds walked by the pwMS in both the FES and non FES conditions. One limitation of this study is that the number of participants in this study was small (n=12 pwMS; 12 controls) limiting generalizability of the results to all people with MS.

The methodology was well researched, clearly articulated and appropriate. Analysis was appropriate. Paired t-tests with the Bonferroni correction for multiple comparisons were used to investigate the differences within the group of pwMs walking with and without FES, and then between the pwMS group and the controls. One could clearly understand the results presented by looking at the data.

Use of FES for pwMS and other neurological diagnoses has been reported in the literature and is gaining popularity in the clinic. While FES is not covered by all insurance programs it is up to individuals to decide if they would be interested in using it. FES is an alternative to rigid ankle orthoses. It is lighter, less rigid, and allows for greater range of motion. In addition pwMS may like the option to wear alternative footwear for cosmetic reasons. Further research comparing gait speed and carryover in ability between both types of orthoses would be interesting. ■

Would you like to contribute to the DDSIG Newsletter?

Contact us and let us know what you are interested in writing about!

Merci!
Danke!
Grazie!
Thanks!

The Leadership of the DDSIG would like to extend its gratitude to the outgoing members of the Executive Committee: Robbin Howard, PT, DPT, NCS, the outgoing DDSIG Secretary, and Evan Cohen, PT, MA, NCS, the outgoing DDSIG Nominating Committee Chairperson.

Robbin and Evan, please accept our sincerest thanks for your service to the SIG and your profession. Your contributions will long be remembered. We hope that you will both continue your involvement with the DDSIG!

The DDSIG Leadership would like to extend it warmest welcome to the newly elected Leaders. Deb Kegelmeyer, PT, DPT, MS, GCS was elected to the open position on the DDSIG Nominating Committee. Evan Cohen continues to serve the DDSIG as the newly elected Secretary.

Thanks are also due to Daniel White, PT, ScD, NCS, who will assume the role of Nominating Committee Chairperson for the coming year.

Bienvenue!
Willkommen!
Benvenuto!
Welcome!

Degenerative Diseases

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