

# *Journal of* **MULTIPLE SCLEROSIS** *Research*

VOLUME 1

ISSUE 3

December 2021

54

Technology-Based Rehabilitation in MS  
Karakaş et al.

69

Severity of Depression and Anxiety  
in Multiple Sclerosis  
Seferoğlu et al.

75

Effect of Fampridine on Upper  
Extremity Functions  
Ozdogar et al.

79

Upper Extremity and Balance in MS  
Dastan et al.

84

Attitudes of Patients with  
Multiple Sclerosis  
Yigit et al.

**ms**  
RESEARCH  
ASSOCIATION

galenos  
yayinevi

*Giovanni Mingazzini*

#### Editor in Chief

##### Serkan Ozakbas

Dokuz Eylul University Hospital, Clinic of  
Neurology, Izmir, Turkey  
0000-0003-2140-4103  
serkan.ozakbas@gmail.com

#### Assistants Editors

##### Childhood CNS Demyelinating Diseases

##### Banu Anlar

Hacettepe University Faculty of Medicine,  
Department of Child Health and Diseases,  
Division of Pediatric  
0000-0001-6727-6229  
banlar@hacettepe.edu.tr

##### Bilge Piri Cinar

Zonguldak Bulent Ecevit University Faculty  
of Medicine, Department of Neurology,  
Zonguldak, Turkey  
0000-0002-4884-0717  
bilge.cinarpiri@gmail.com

#### Clinical Overview

##### Cavid Baba

Dokuz Eylul University, Institute of Health  
Sciences, Izmir, Turkey  
0000-0001-5455-7080  
cavidbaba@hotmail.com

##### Yesim Beckmann

Izmir Katip Celebi University Faculty of  
Medicine, Department of Neurology, Izmir,  
Turkey  
0000-0001-5158-8834  
ybeckmann@gmail.com

##### Ozlem Taskapilioglu

Bursa Acibadem Private Hospital, Department  
of Neurology, Bursa, Turkey  
0000-0003-4436-3797  
taskapilioglu@gmail.com

#### Cognition

##### Bilge Piri Cinar

Zonguldak Bulent Ecevit University Faculty  
of Medicine, Department of Neurology,  
Zonguldak, Turkey  
0000-0002-4884-0717  
bilge.cinarpiri@gmail.com

##### Emre Bora

Dokuz Eylul University Hospital, Department of  
Psychiatry, Izmir, Turkey  
0000-0002-1598-6832  
emre.bora@deu.edu.tr

#### Imaging

##### Cavit Boz

Karadeniz Technical University Faculty of  
Medicine, Department of Neurology, Trabzon,  
Turkey  
0000-0003-0956-3304  
cavitb@yahoo.com

##### Rahsan Gocmen

Cukurova University Faculty of Medicine,  
Department of Radiology, Adana, Turkey  
0000-0002-0223-9336  
gocmenr@yahoo.com

##### Serkan Demir

Health Science of University Turkey, Sehit  
Prof. Dr. Ilhan Varank Sancaktepe Training  
and Research Hospital, Clinic of Neurologist,  
Istanbul, Turkey  
0000-0003-4395-5141  
drsrkndemir@gmail.com

#### Neuroimmunology

##### Asli Tuncer

Hacettepe University Faculty of Medicine,  
Department of Neurology, Ankara, Turkey  
0000-0001-9449-4483  
maslituncer@gmail.com

##### Erdem Tuzun

Istanbul University Faculty of Medicine,  
Department of Neurology, Istanbul, Turkey  
0000-0002-4483-0394  
drerdem@yahoo.com

#### Rehabilitation

##### Alon Kalron

School of Health Professions, Sackler Faculty  
of Medicine and Sagol School Department of  
Physical Therapy, of Neuroscience, Tel Aviv,  
Israel  
0000-0001-7999-0868  
alonkalr@post.tau.ac.il

##### Ozge Ertekin

Dokuz Eylul University School of Physical  
Therapy and Rehabilitation, Department of  
Neurological Physiotherapy-Rehabilitation,  
Izmir, Turkey  
0000-0001-9935-0673  
ozge28altin@hotmail.com

##### Turhan Kahraman

Izmir Katip Celebi University, Faculty of Health  
Sciences, Department of Physiotherapy and  
Rehabilitation, Izmir, Turkey  
0000-0002-8776-0664  
turhan.kahraman@yahoo.com

#### Research Design and Data Analytics

##### Mehmet Berktaş

Blue Idea Consulting, London United Kingdom

#### Young Researchers Editorial

##### Ipek Gungor Dogan

University of Health Sciences Turkey, Sehit  
Prof. Dr. Ilhan Varank Sancaktepe Training and  
0000-0002-8667-9119  
dripekgngr@gmail.com

##### Cavid Baba

Dokuz Eylul University, Institute of Health  
Sciences, Izmir, Turkey  
0000-0001-5455-7080  
cavidbaba@hotmail.com

#### Statistics Editorial

##### Mehmet Berktaş

Galenos Yayınevi Kurucusu ve Sahibi/  
Galenos Publishing House Owner and Publisher  
Derya Mor  
Erkan Mor  
Genel Yayın Koordinatörü/Publication Coordinator  
Burak Sever  
Web Koordinatörleri/Web Coordinators  
Fuat Hocalar  
Turgay Akpınar  
Grafik Departmanı/Graphics Department  
Ayda Alaca  
Çiğdem Birinci  
Gülşah Özgül  
Finans Koordinatörü/Finance Coordinator  
Sevinç Çakmak

Proje Koordinatörleri/Project Coordinators  
Aysel Balta  
Duygu Yıldırım  
Gamze Aksoy  
Gülşah Akın  
Hatice Sever  
Melike Eren  
Özlem Çelik Çekil  
Pınar Akpınar  
Rabia Palazoğlu  
Araştırma&Geliştirme/Research&Development  
Nihan Karamanlı  
Melisa Yiğitoğlu  
Dijital Pazarlama Uzmanı/  
Digital Marketing Specialist  
Ümit Topluoğlu

Yayınevi İletişim/Publisher Contact  
Adres/Address: Molla Gürani Mah. Kaçamak Sk. No: 21/1  
34093 İstanbul, Türkiye  
Telefon/Phone: +90 (212) 621 99 25  
Faks/Fax: +90 (212) 621 99 27  
E-posta/E-mail: info@galenos.com.tr/yayin@galenos.com.tr  
Web: www.galenos.com.tr Yayın Sertifikası No: 14521

Online Yayınlanma Tarihi/Online Publication Date:  
Aralık 2021/December 2021

E-ISSN: 2791-7851

Üç ayda bir yayımlanan süreli yayındır.  
International scientific journal published quarterly.



## ABOUT US

*Journal of Multiple Sclerosis Research* is the official open access scientific publication of the Multiple Sclerosis Research Association. This double-blind peer-reviewed journal is published quarterly in April, August, and December.

The target audience of the *Journal of Multiple Sclerosis Research* includes all health professionals working in the fields of multiple sclerosis, neuromyelitis optica and spectrum diseases, and other related diseases of the central nervous system.

Processing of articles and publication are free of charge. No fee is requested from the authors at any point throughout the evaluation and publication process. All manuscripts must be submitted via the online submission system, which is available through the journal's web page.

The editorial processes are designed in accordance with the guidelines of international organizations such as the International Council of Medical Journal Editors (ICMJE) (<http://www.icmje.org>) and the Committee on Publication Ethics (COPE) (<http://publicationethics.org>).

All manuscripts should be submitted through the journal's web page at [www.jmsres.com](http://www.jmsres.com). Instructions for authors, technical information, and other necessary forms can be accessed over this web page. Authors are responsible for all contents of their manuscript.

The mission of the *Journal of Multiple Sclerosis Research* is to provide practical, timely, and relevant clinical and basic science information to all health professionals and researchers working in the field of multiple sclerosis.

The *Journal of Multiple Sclerosis Research* publishes original research papers, interesting case reports, invasive procedures, clinical and basic science review articles, editorials, and letters to the editor, about multiple sclerosis and related topics, all of which have the highest scientific and clinical value at an international level.

### Open Access Policy

The *Journal of Multiple Sclerosis Research* provides immediate open access to its content on the principle that making research freely available to the public supports a greater global exchange of knowledge.

The Open Access Policy is based on the rules of the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/>). "Open access" to peer-reviewed research literature means that it is freely available on the Internet, permitting any user access to the link with the full text of articles to read, download, copy, distribute, print, search, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose without financial, legal, or technical barriers, other than those inseparable from gaining access to the Internet itself. The only constraint on reproduction and distribution, and the only role for copyright in this domain, should be to give authors control over their work's integrity and the right to be properly acknowledged and cited.

This work is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License.

### Address for Correspondence

Organization: Multiple Sclerosis Research Association

Address: Korutürk Mah. V. Hüseyin Ögütçen Cad. No: 45/B D: 8 Balçova/İzmir

Phone: (0232) 484 74 80

E-mail: [info@msarastirmalaridernegi.com](mailto:info@msarastirmalaridernegi.com)

### Issuing Body

Galenos Yayınevi Tic. Ltd. Şti.

Molla Gürani Mah. Kaçamak Sok. No: 21, 34093, Fındıkzade, İstanbul, Türkiye

Phone: +90 212 621 99 25

Fax: +90 212 621 99 27

E-mail: [info@galenos.com.tr](mailto:info@galenos.com.tr)

### Copyright Notice

The Multiple Sclerosis Research Association holds the international copyright of all the contents published in the *Journal of Multiple Sclerosis Research*.

Republication and reproduction of images or tables in any published material should be done with proper citation of the source, providing author names, article title, journal title, year (volume) and page of publication, and copyright year of the article.

The author(s) hereby affirms (affirm) that the manuscript submitted is original, that all statement asserted as facts are based on the author's (authors') careful investigation and research for accuracy, that the manuscript does not, in whole or part, infringe any copyright, that it has not been published in total or in part, and that it is not being submitted or considered for publication in total or in part elsewhere.

Completed Copyright Statement form should be submitted to the online article system.

By signing this form,

1. Each author acknowledges that he/she participated in the work substantially and is prepared to take public responsibility for the work.

2. Each author further affirms that he/she has read and understands the "Ethical Guidelines for Publication of Research."

3. The author(s), in consideration for the acceptance of the manuscript for publication, does (do) hereby assign and transfer to the *Journal of Multiple Sclerosis Research* all the rights and interest and the copyright of the work in its current form and in any form subsequently revised for publication and/or electronic dissemination.

### Material Disclaimer

The author(s) is (are) responsible for the articles published in the *Journal of Multiple Sclerosis Research*. The Editor, Editorial Board, and Publisher do not accept any responsibility for the articles.

## INSTRUCTIONS TO AUTHORS

*Journal of Multiple Sclerosis Research* is the official open access scientific publication organ of the Multiple Sclerosis Research Association, with English as the journal's publication language.

*Journal of Multiple Sclerosis Research* does not charge any fee for article submission or processing and publication. Also, manuscript writers are not paid by any means for their manuscripts.

The journal should be abbreviated as "J Mult Scler Res" when referenced.

*Journal of Multiple Sclerosis Research* accepts invited review articles, research articles, brief reports, case reports, letters to the editor, and images that are relevant to the scope of multiple sclerosis, neuromyelitis optica, and other related diseases of the central nervous system on the condition that they have not been previously published elsewhere. All manuscripts are subject to editorial revision to ensure they conform to the style adopted by the journal. There is a double-blind reviewing system.

The Editorial Policies and General Guidelines for manuscript preparation specified below are based on "Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals (ICMJE Recommendations)" by the International Committee of Medical Journal Editors (2013, archived at <http://www.icmje.org>).

### Editorial Process

The manuscript submission and editorial review process are as follows:

After receiving each manuscript, a checklist is completed by the editorial assistant. The editorial assistant checks that each manuscript contains all required components and adheres to the author guidelines, after which time it will be forwarded to the editor in chief. Following the editor in chief's evaluation, each manuscript is forwarded to the associate editor, who assigns reviewers. The selected reviewers (at least three) will generally review all manuscripts based on their relevant expertise. The associate editor could also be assigned as a reviewer along with the reviewers. After the reviewing process, all manuscripts are evaluated in the editorial board meeting.

### The Review Process

This journal applies double-blind review, which means that the reviewers cover both the reviewer and the author identifications throughout the review process.

Each manuscript submitted to the *Journal of Multiple Sclerosis Research* is subject to an initial review by the editorial office to determine if it is aligned with the journal's aims and scope and complies with essential requirements. Manuscripts (all double-blind and peer-reviewed) sent for peer review will be assigned to one of the journal's associate editors, who is an expert on the manuscript's content. During the review, the statistics department editor will evaluate articles that need detailed statistical evaluation. All accepted manuscripts are subject to English language editing. Once papers have been reviewed, the reviewers' comments are sent to the editor, who will make a preliminary decision on the paper. At this stage, based on the feedback from reviewers, manuscripts can be either accepted or rejected, or revisions can

be recommended. Following initial peer review, articles judged worthy of further consideration often require revision. Revised manuscripts generally must be received within 3 months from the date of the initial decision and must include "point-to-point response to the comments of reviewers" and a copy of the revised text by highlighting the changes made in the revised manuscripts. Extensions must be requested from the associate editor at least 2 weeks before the 3-month revision deadline expires; *Journal of Multiple Sclerosis Research* will reject manuscripts received beyond the 3-month revision deadline. Manuscripts with extensive revision recommendations will be sent for further review (usually by the same reviewers) upon their re-submission. When a manuscript is finally accepted for publication, the technical editor will make a final edit, and a marked-up copy will be e-mailed to the corresponding author for review and for any final adjustments.

### Preparation of Manuscript

Manuscripts should be prepared according to ICMJE guidelines (<http://www.icmje.org>).

Original manuscripts require a structured abstract. Each section of the structured abstract must be labelled with the appropriate subheading (Objective, Materials and Methods, Results, and Conclusion). Case reports require short unstructured abstracts, whereas letters to the editor do not require an abstract. Research or project support should be acknowledged as a footnote on the title page.

Technical and other assistance should be provided on the title page.

Preparation of research articles, systematic reviews, and meta-analyses must comply with study design guidelines:

CONSORT statement for randomized controlled trials (Moher D, Schultz KF, Altman D, for the CONSORT Group. The CONSORT statement revised recommendations for improving the quality of reports of parallel-group randomized trials. JAMA 2001;285:1987-1991) (<http://www.consort-statement.org/>);

PRISMA statement of preferred reporting items for systematic reviews and meta-analyses (Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group. Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 2009;6(7):e1000097.) (<http://www.prisma-statement.org/>);

STARD checklist for the reporting of studies of diagnostic accuracy (Bossuyt PM, Reitsma JB, Bruns DE, Gatsonis CA, Glasziou PP, Irwig LM, et al., for the STARD Group. Toward complete and accurate reporting of studies of diagnostic accuracy: the STARD initiative. Ann Intern Med 2003;138:40-44.) (<http://www.stard-statement.org/>);

STROBE statement, a checklist of items that should be included in reports of observational studies (<http://www.strobe-statement.org/>);

Meta-analysis of observational Studies in Epidemiology (MOOSE) guidelines for meta-analysis and systemic reviews of observational studies (Stroup DF, Berlin JA, Morton SC, et al. Meta-analysis of observational studies in epidemiology: a proposal for reporting MOOSE group. JAMA 2000;283:2008-2012).

## INSTRUCTIONS TO AUTHORS

**References:** References should be cited in the text, tables, and figures with numbers in parentheses. References should be numbered consecutively according to the order in which they first appear in the text. All authors should be in the references. Journal of Multiple Sclerosis Research research adheres to the NLM style.

### Manuscript Format and Style

#### Writing rules

The submission should be split into separate files in the following order:

- Title
- Main Document (English abstract and keywords-Turkish abstract and keywords, main text, references, tables and figure explanations should be included).
- Figures, pictures and graphics files in .jpeg or .gif formats should be uploaded separately.
- Copyright Transfer Form and Authorship Contribution Form
- Ethics committee approval form should be available for research articles.

#### Title Page

**Title:** The title should provide important information regarding the manuscript's content. The title page should include the authors' names, degrees, and institutional/professional affiliations, a short title, abbreviations, keywords, financial disclosure statement, and conflict of interest statement. If a manuscript includes authors from more than one institution, each author's name should be followed by a superscript number corresponding to their institution, which is listed separately. The contact information for the corresponding author should also be provided, including name, e-mail address, telephone, and fax numbers.

**Running Head:** The running head should not be more than 40 characters, including spaces, and should be located at the bottom of the title.

**Word Count:** The word count does not include the abstract, references, or figure/table legends. The word count must be noted on the title page, along with the number of figures and tables. Original articles should be less than 3000 words and include no more than six figures, tables and 50 references.

**Tables and figures:** All tables and figures must be placed after the text and must be labelled.

**Data Sharing Policies:** Data sharing policies concern the minimal dataset that supports the central findings of a published study. Generated data should be publicly available and cited in accordance with the journal guidelines. Authors must inform the journal about the tables and figures created.

The journal expects that data supporting the results in the paper will be archived in an appropriate public repository. Authors are required to provide a data availability statement to describe the availability or the absence of shared data. When data have been shared, authors are required to include a link to the used repository in their data availability statement and to cite their shared

data. Journal of Multiple Sclerosis Research requests detailed information from the authors regarding the data sharing policy.

**Conflict of Interest Statement:** To prevent potential conflicts of interest from being overlooked, this statement must be included in each manuscript. In case of conflicts of interest, every author should complete the ICMJE general declaration form, which can be obtained from [http://www.icmje.org/coi\\_disclosure.pdf](http://www.icmje.org/coi_disclosure.pdf).

**Abstract and Keywords:** The second page should include an abstract not exceeding 250 words. Moreover, as various electronic databases integrate only abstracts into their index, important findings should be presented in the abstract.

#### Abstract

The abstract should be short and factual. It should state the purpose of the research briefly and should be structured according to the following subheadings: Objective, Materials and Methods, Results, and Conclusion. Abbreviations should be avoided and reference citations are not permitted. References should be avoided, and nonstandard or uncommon abbreviations should be avoided, but if essential they must be defined at their first mention in the abstract itself. The clinical trial number should be provided at the end of the abstract.

**Objective:** The abstract should state the objective (the purpose of the study and hypothesis) and summarize the rationale for the study.

**Materials and Methods:** Important methods should be written respectively.

**Results:** Important findings and results should be provided here.

**Conclusion:** The study's new and important findings should be highlighted and interpreted.

Other types of manuscripts, such as case reports, reviews, and others, will be published according to uniform requirements.

**Keywords:** Provide at least three keywords below the abstract to assist indexers. Use terms from the Index Medicus Medical Subject Headings List (for randomized studies, a CONSORT abstract should be provided ( <http://www.consort-statement.org> ).

#### 1. Original Articles:

An article is considered original research if;

It is the report of a study written by the researchers who actually did the study.

The researchers describe their hypothesis or research question and the purpose of the study.

The researchers detail their research methods.

The results of the research are reported.

The researchers interpret their results and discuss possible implications.

This is the most common type of journal manuscript used to publish full data reports from research. It may be called an Original Article, Research Article, Research, or just Article, depending on the journal.



# INSTRUCTIONS TO AUTHORS

Original articles should have the following sections:

**Introduction:** The introduction should include an overview of the relevant literature presented in summary form (one page), and whatever remains interesting, unique, problematic, relevant, or unknown about the topic must be specified. The introduction should conclude with the rationale for the study and its design and objective(s).

**Materials and Methods:** The selection of observational or experimental participants, such as patients, laboratory animals, and controls, must be clearly described, including inclusion and exclusion criteria and a description of the source population. Sufficiently detailed methods and procedures must be identified to allow other researchers to reproduce the results. References to established methods (including statistical methods) and to brief modified methods and the rationale for using them and evaluation of their limitations must be provided. All drugs and chemicals used, including generic names, doses, and routes of administration, must be identified. The section should include only information that was available at the time the plan or protocol for the study was devised on STROBE (<http://www.strobe-statement.org>).

**Statistics:** The statistical methods used in enough detail to enable a knowledgeable reader with access to the original data to verify the reported results must be described. Statistically important data should be provided in the text, tables, and figures. Details about randomization and the number of observations must be provided as well, the treatment complications must be described, and all computer programs used must be specified.

**Results:** Your results should be presented in logical sequence in the text, tables, and figures. Not all the data provided in the tables and/or figures in the text must be presented; Only important findings, results, and observations should be emphasized and/or summarized. For clinical studies, the number of samples, cases, and controls included in the study should be provided. Discrepancies between the planned number and the obtained number of participants should be explained. Comparisons and statistically important values (i.e., p-value and confidence interval) should be provided.

**Discussion:** This section should include a discussion of the data. New and important findings/results and the conclusions they lead to should be emphasized. The conclusions should be linked with the goals of the study, but unqualified statements and conclusions not entirely supported by the data should be avoided. The detailed findings/results should not be repeated; important findings/results should be compared with those of similar studies in the literature, along with a summary. In other words, similarities or differences in the obtained findings/results with those previously reported should be discussed.

**Study Limitations:** Limitations of the study should be detailed. In addition, an evaluation of the implications of the obtained findings/results for future research should be outlined.

**Conclusion:** The conclusion of the study should be highlighted.

**2. Case Reports:** A case report is a detailed report of the symptoms, signs, diagnosis, treatment, and follow-up of an individual patient. It usually describes an unusual or novel occurrence and remains one of the cornerstones of medical progress and provides many

new ideas in medicine. Case reports should be structured as follows:

**Abstract:** an unstructured abstract that summarizes the case

**Introduction:** a brief introduction (recommended length: 1–2 paragraphs)

**Case Presentation:** describes the case in detail, including the initial diagnosis and outcome

**Discussion:** should include a brief review of the relevant literature and how the presented case furthers our understanding to the disease process

**3. Review Articles:** Review articles provide a comprehensive summary of research on a certain topic and a perspective on the state of the field and where it is heading. They are often written by leaders in a particular discipline after an invitation from the editors of a journal.

Review articles should include a conclusion in which a new hypothesis or study about the subject may be posited. Methods for literature search or level of evidence should not be published. Authors who will prepare review articles should already have published research articles on the relevant subject. There should be a maximum of two authors for review articles.

**4. Images:** Authors can submit for consideration an illustration and photos that are interesting, instructive, and visually attractive, along with a few lines of explanatory text and references. No abstract, discussion, or conclusion is required, but a brief title should be included.

**5. Letters to the Editor:** A letter to the editor (sometimes abbreviated LTTE or LTE) is a letter sent to a publication about issues of concern from its readers. In academic publishing, letters to the editor of an academic journal are usually open post-publication reviews of a paper, often critical of some aspects of the original paper. For letters to the editor, no abstract is required, but a brief title should be included.

**6. Invited Review Article:** Invited review articles are comprehensive analyses of specific topics in medicine, which are written upon invitation due to extensive experience and publications of authors on their view of the subjects. All invited review articles will also undergo peer review prior to acceptance.

**7. Editorial Comment:** Editorial comments are a brief remark on an article published in the journal by the viewer of their article or by a relevant authority. Most comments are invited by the editor in chief, but spontaneous comments are welcome. An abstract is not required with this type of manuscripts.

**References:** References should be cited in the text, tables, and figures with numbers in parentheses. References should be numbered consecutively according to the order in which they first appear in the text. All authors should be in the references. Journal of Multiple Sclerosis Research research adheres to the NLM style.

[https://www.nlm.nih.gov/bsd/uniform\\_requirements.html](https://www.nlm.nih.gov/bsd/uniform_requirements.html)

## Examples of References

### 1. List All Authors

Bonanni E, Tognoni G, Maestri M, Salvati N, Fabbri M, Borghetti D, DiCoscio E, Choub A, Sposito R, Pagni C, Iudice A, Murri L.

# INSTRUCTIONS TO AUTHORS

Sleep disturbances in elderly subjects: an epidemiological survey in an Italian district. *Acta Neurol Scand* 2010;122:389-397.

## 2. Organization as Author

American Geriatrics Society 2015 Updated Beers Criteria Expert panel. American geriatrics society 2015 updated Beer criteria for potentially inappropriate medication use in older adults. *J Am Geriatr Soc* 2015;63: 2227-2246.

## 3. Complete Book

Ham RJ, Sloane PD, Warshaw GA, Potter JF, Flaherty E. Ham's primary care geriatrics : a case-based approach, 6th ed. Philadelphia, Elsevier/Saunders, 2014.

## 4. Chapter in Book

BG Katzung. Special Aspects of Geriatric Pharmacology, In: Bertram G. Katzung, Susan B. Masters, Anthony J. Trevor (Eds). Basic and Clinical Pharmacology. 10th edition, Lange, Mc Graw Hill, USA 2007, pp 983-90.

## 5. Abstract

Reichenbach S, Dieppe P, Nuesch E, Williams S, Villiger PM, Juni P. Association of bone attrition with knee pain, stiffness and disability; a cross sectional study. *Ann Rheum Dis* 2011;70:293-8. (abstract).

## 6. Letter to the Editor

Rovner B. The Role of the Annals of Geriatric Medicine and Research as a Platform for Validating Smart Healthcare Devices for Older Adults. *Ann Geriatr*. 2017;21:215-216.

## 7. Supplement

Garfinkel D. The tsunami in 21st century healthcare: The age-related vicious circle of co-morbidity - multiple symptoms - over-diagnosis - over treatment - polypharmacy [abstract]. *J Nutr Health Aging* 2013;17(Suppl 1):224-227.

## Tables, Graphics, Figures, and Images

**Tables:** Each table should be supplied on a separate file. Tables should be numbered according to the order in which they appear in the text, and a brief caption for each should be supplied. Each column must have a short or abbreviated heading. Explanatory statistical measures of variation, such as standard deviation or standard error of the mean, must be written. Each table must be cited in the text.

**Figures:** Figures should be professionally drawn and/or photographed. Figures should be numbered according to the order in which they appear in the text. Figures include graphs, charts, photographs, and illustrations. Each figure should be accompanied by a legend that does not exceed 50 words. Abbreviations must be used only if they have been introduced in the text. Authors are also required to provide the level of magnification for histological slides. The internal scale must be explained, and the staining method used must be identified. Figures should be submitted as separate files, not in the text file. High-resolution image files are not preferred for initial submission as the file sizes may be too large. The total file size of the PDF for peer review should not exceed 5 MB.

Type of Article	Abstract	Word Count*	Number of References	Tables/Figures
Original Articles	250	3000	50	5
Review Articles	250	3500	100	5
Invited Review Article	250	3500	75	5
Case Reports	100	1000	15	2
Images	None	500	10	2
Letters to the Editor	None	600	10	1
Editorial Comment	None	1500	20	2
*Excludes abstract, acknowledgments, conflict of interest statement, references and tables; maximum word counts.				

## Authorship

Each author should have participated sufficiently in the work to assume public responsibility for the content. Any portion of a manuscript that is critical to its main conclusions must be the responsibility of at least one author. Please check the definition of the role of authors and contributors in the following link:

<http://www.icmje.org/recommendations/browse/roles-and-responsibilities/defining-the-role-of-authors-and-contributors.html>.

## Contributor's Statement

All submissions should contain a contributor's statement page. Each manuscript should contain substantial contributions to idea and design, acquisition of data, or analysis and interpretation of findings. All persons designated as an author should qualify for authorship, and all those that qualify should be listed. Each author should have participated sufficiently in the work to take responsibility for appropriate portions of the text.

## Acknowledgement

The support received from individuals, organizations, grants, corporations, and any other source should be acknowledged. For work involving a biomedical product or potential product partially or wholly supported by corporate funding, a note stating "This study was financially supported (in part) with funds provided by (company name) to (authors' initials)" must be included. Grant support, if received, needs to be stated and the specific granting institutions' names and grant numbers provided when applicable.

Authors are expected to disclose on the title page any commercial or other associations that might pose a conflict of interest in connection with the submitted manuscript. All funding sources that supported the work and the institutional and/or corporate affiliations of the authors should be acknowledged on the title page.

## Ethics

When reporting experiments conducted with humans, it must be indicated that the procedures were in accordance with ethical

## INSTRUCTIONS TO AUTHORS

standards set forth by the committee that oversees human experimentation. Approval of research protocols by the relevant ethics committee, in accordance with international agreements (Helsinki Declaration of 1975, revised 2013 available at <http://www.wma.net/e/policy/b3.html> "Guide for the Care and use of Laboratory Animals" [www.nap.edu/catalog/5140.html](http://www.nap.edu/catalog/5140.html) ), is required for all experimental, clinical, and drug studies. Studies performed on humans require an ethics committee certificate, including an approval number. It also should be indicated in the "Materials and Methods" section. Patient names, initials, and hospital identification numbers should not be used. Manuscripts reporting the results of experimental investigations conducted with humans must state that the study protocol received institutional review board approval and that the participants provided informed consent.

Noncompliance with scientific accuracy is not in accord with scientific ethics.

### Plagiarism Detection

Plagiarism is a serious problem, and the most common ethical issue afflicting medical writing.

*Journal of Multiple Sclerosis Research* does not allow any form of plagiarism. In accordance with our journal policy, submitted manuscripts are screened with plagiarism software to detect instances of overlapping and similar text (iThenticate) at least two times (during the evaluation process and after acceptance).

### Conditions of Publication

All authors are required to affirm the following statements before their manuscript is considered:

Submission is considered on the condition that papers are previously unpublished and are not offered simultaneously elsewhere, that all authors have read and approved the content, that authors have declared all competing interests, and that the work has been conducted under internationally accepted ethical standards after relevant ethical review.

All authors are responsible for the manuscript's content.

All authors participated in the study concept and design, analysis and interpretation of the data, and drafting or revising of the manuscript and have approved the manuscript as submitted.

In addition, all authors are required to disclose any professional affiliation, financial agreement, or other involvement with any company whose product figures are prominent in the submitted manuscript.

Authors of accepted manuscripts will receive electronic page proofs and are responsible for proofreading and checking the entire article within 2 days. Failure to return the proof in 2 days will delay publication. If the authors cannot be reached by e-mail or telephone within 2 weeks, the manuscript will be rejected and will not be published in the journal.

### Abbreviations and Symbols

Use only standard abbreviations. Avoid abbreviations in the title and abstract. The full term for an abbreviation should precede its first use in the text unless it is a standard abbreviation. All acronyms used in the text should be expanded at first mention, followed by the abbreviation in parentheses; thereafter, the acronym only should appear in the text. Acronyms may be used in the abstract if they occur three or more times therein but must be reintroduced in the body of the text. Generally, abbreviations should be limited to those defined in the AMA Manual of Style, current edition. A list of each abbreviation (and the corresponding full term) used in the manuscript must be provided on the title page.

The ORCID (Open Researcher and Contributor ID) number of the corresponding author should be provided while sending the manuscript. A free registration can be created at <http://orcid.org>.

### Subscription Information

Multiple Sclerosis Research Association

Korutürk Mah. V. Hüseyin Ögütçen Cad. No: 45/B D: 8 Balçova/İzmir

Phone: (0232) 484 74 80

### Online Submission:

Web page: [jmsres.com](http://jmsres.com)

E-mail: [info@jmsres.com](mailto:info@jmsres.com)

### Correspondence

All correspondence should be directed to the journal's editorial.

Editor in chief: Prof. Dr. Serkan OZAKBAS



## PEER REVIEW

Editorial policies of the journal adhere to the rules advised by the Council of Science Editors and are reflected in uniform requirements for manuscripts submitted to biomedical journals: writing and editing for biomedical publication (<http://www.icmje.org/>).

Submitted manuscripts are subjected to double-blind peer review. The scientific board, which guides the selection of papers for potential publication in the journal, consists of elected experts of the Journal and, if necessary, may be selected from national and international experts in the relevant field of research. All manuscripts are reviewed by the editor, section editors, and at least three internal and external expert reviewers.

The authors of the accepted manuscripts should consent that the editor and section editors can make corrections without changing the main text of the paper. The manuscript format should follow uniform requirements for manuscripts submitted to biomedical journals: writing and editing for biomedical publication (<http://www.icmje.org/>).

### **Ethics**

Approval of the Ethics Committee and a statement on the adherence of the study protocol to international guidelines (Declaration of Helsinki revised in 2013 [[www.wma.net/e/policy/b3.html](http://www.wma.net/e/policy/b3.html)]) are required for experimental and clinical studies as well as studies on drug-human interactions. In experimental animal studies, the authors should indicate that the procedures were followed in accordance with animal rights (Guide for the Care and Use of Laboratory Animals [<https://www.nap.edu/catalog/5140/>]) and should obtain approval from the Animal Ethics Committee.

The approval of the Ethics Committee, statement on the adherence to international guidelines, and patient's informed consent should be indicated in the "Materials and Methods" section. These are also required for case reports whenever data/media used could reveal the identity of the patient. The declaration of a conflict of interest between authors and institutions and acknowledgment of any financial or material support and aid is mandatory for submission of the manuscript. Relevant statements should be written at the end of the manuscript. Reviewers are required to report if any potential conflict of interest exists among reviewers, authors, and institutions.

We disapprove unethical practices such as plagiarism, fabrication, duplication, and salamisation, as well as efforts to influence the review process with practices such as gifting authorship, inappropriate acknowledgments, and references. Additionally, authors must respect participants' right to privacy. Moreover, short abstracts published in congress books that do not exceed 400 words, present preliminary research data, and are presented in an electronic environment are not accepted as pre-published work. Authors in such a situation must declare this status on the first page of the manuscript and in the cover letter. (The Committee on Publication Ethics flowchart is available at: <http://publicationethics.org>) All responsibility of the published articles belongs to the authors.

Submitted manuscripts are also subjected to the evaluation of plagiarism and duplicate publication by an automated software. Authors are obliged to acknowledge if they published study results in full or in part in the form of abstracts.

## CONTENTS

### REVIEW

- 54** Technology-Based Rehabilitation in People with Multiple Sclerosis: A Narrative Review  
*Hilal Karakas, Barbara Seebacher, Turhan Kahraman; Izmir, Turkey, Innsbruck, Muenster, Austria*

### RESEARCH ARTICLE

- 69** Factors Associated with Depression and Anxiety Severity in Multiple Sclerosis Patients  
*Meral Seferoglu, Nizameddin Koca, Ali Ozhan Sivaci, Sukran Yurtogullari; Bursa, Turkey*
- 75** The Efficacy of Fampridine on Upper Extremity Functions in Individuals with Multiple Sclerosis: Is There a Difference between Cerebellar and Pyramidal Dysfunction?  
*Asiye Tuba Ozdogar, Sinem Ozcelik, Seda Dastan; Izmir, Turkey*
- 79** Investigating the Relationship Between Balance and Upper Extremity Function in People with Multiple Sclerosis  
*Seda Dastan, Nurbanu Aygunduz Yapici, Asiye Tuba Ozdogar; Izmir, Turkey*
- 84** Attitudes of Patients with Multiple Sclerosis Towards Disease and Physical Activity Behaviors During the COVID-19 Pandemic  
*Pinar Yigit, Ergi Kaya, Zuhale Abasiyanik, Ozge Sagici; Izmir, Turkey*

### Index 2021

Referee Index  
Author Index  
Subject Index