

# Editorial

## Citations, Impact Factor, and the *Journal*

John E. Morley

Geriatric Research, Education, and Clinical Center, St. Louis VA Medical Center and Division of Geriatric Medicine,  
Saint Louis University, Missouri.

CITATIONS to articles have become a major factor in judging the quality of a journal. For this reason I am happy to report that the *Journal's* impact factor increased again in the most recently reported data for 2001. The *Journal's* impact factor has increased from 1.222 to 1.898 since 1999. The impact factor is the number of times that articles published in the previous 2 years (1999 and 2000) were cited in the following year (2001), divided by the number of articles published in the previous 2 years. There is also a strong suggestion that the impact factor will be even higher next year, as the immediacy index (the number of times that articles published in the same year, are cited in that year, divided by the number of published articles in that year) was a healthy 0.391 in 2001. This immediacy index for the *Journal* was higher than that reported for the *Journal of the American Geriatrics Society*. Part of the improvement in the increase in citations to articles in the *Journal* has been the rapid review time (12 days to first decision in 2000; 18 days to first decision in 2001) and the shorter publication lag (now between 4 and 6 months). This has made the *Journal* an ideal venue for gerontologists to publish their most important articles.

The other reason for the success of the *Journal* has been the high quality of manuscripts submitted to it. One method to look at the quality of articles submitted to the *Journal* since 1999 is to examine which articles have been highly cited from their publication until July of 2002. To do this we have developed arbitrary cutoffs of 15 or more citations for those published in 1999, 10 or more for those published in 2000, and 5 or more for those published in 2001 (Tables 1, 2, and 3, respectively). It should be recognized that articles published toward the end of a given year are at a disadvantage compared with those published earlier in the year.

The most cited article for 1999 was by Sonntag and colleagues (1). This article pointed out the dichotomous effect of caloric restriction in that it produces an increase in growth hormone and a reduction in insulin growth factor-1 (IGF-1). As IGF-1 has been suggested to play a role in the pathogenesis of cancer, the authors suggested that these findings could provide a neuroendocrine compensatory mechanism to explain the action of moderate caloric restriction to produce extension of the life span. In contrast to this article, in 2001 Bartke and colleagues (2) argued that growth hormone was detrimental to prolonged life span. They pointed out that mutant mice with growth hormone

deficiency and knockout mice with growth hormone resistance live longer than their normal siblings. In humans, men with high normal growth hormone have a shorter survival compared with those with lower levels, and growth hormone administration resulted in increased mortality in critically ill persons (3).

A number of other articles on caloric extension have been highly cited, making this a hot topic (4-6). The importance of this area was highlighted by the publication of a supplement to the *Journals* in this area (7-11). Previously, in an editorial, I pointed out that animals living in the wild have a very low body mass, and therefore caloric restriction may merely represent the return to a natural state (12). This would be in keeping with the suggestion of Barzilai and Gupta (4) that it is the reduction of fat mass that is directly responsible for the effects of caloric restriction. Walford and colleagues (13) recently described the changes of persons calorically restricted in Biosphere 2 and the response that followed once they left the biosphere.

A number of highly cited articles have further explored the role of nutrition in both animals and humans, making this another area recognized by the publication of a supplement to the *Journals* (14,15). Wolden-Hanson and colleagues (16) examined the effect of aging on body composition and demonstrated the strong association between the increase in body fat and leptin secretion. In men, as pointed out in another highly cited article (17), leptin levels are not only associated with total adiposity but also an increase in the presence of low testosterone levels. Kenny and colleagues (18) showed that testosterone replacement in older men leads to decreased body fat, increased muscle mass, and increased bone mineral density. The *Journal* has highlighted the importance of andropause by publishing an outstanding review article by Matsumoto (19) and a number of other articles (20-24).

A key article on nutrition was published by Mathey and colleagues (25), demonstrating that flavor enhancement can increase dietary intake in nursing home residents. A number of articles in the *Journal* have stressed the importance of adequate nutritional intake in older persons (26-31). The recommendations of the Council on Nutrition for the management of nursing home residents who experience weight loss were published in the *Journal* (32). These provide a simple algorithmic approach to the care of the malnourished older person.

There has been an increasing interest in studying cente-

Table 1. Most Cited Articles in *Journals of Gerontology Series A* in 1999

Author	Ref. No.	Title	Citations
Sonntag and colleagues	1	Pleiotropic effects of growth hormone and insulin-like growth factor (IGF)-1 on biological aging: inferences from moderate caloric-restricted animals	28
Bruunsgaard and colleagues	36	A high plasma concentration of TNF-alpha is associated with dementia in centenarians	27
Bernabei and colleagues	74	Characteristics of the SAGE database: a new resource for research on outcomes in long-term care	26
Wolden-Hanson and colleagues	16	Cross-sectional and longitudinal analysis of age-associated changes in body composition of male brown Norway rats: association of serum leptin levels with peripheral adiposity	26
Cress and colleagues	39	Exercise: effects on physical functioning performance in independent older adults	22
Miller	63	Kleemeier award lecture: are there genes for aging?	22
Koenig and colleagues	75	Does religious attendance prolong survival?	21
Barzilai & Gupta	4	Revisiting the role of fat mass in the life extension induced by caloric restriction	19
Rantanen and colleagues	40	Coimpairments: strength and balance as predictors of severe walking disability	16
Pavol and colleagues	76	The sex and age of older adults influence the outcome of induced trips	15
Morley and colleagues	17	Commentary: leptin, adipose tissue and aging—is there a role for testosterone?	15
Jozsi and colleagues	41	Changes in power with resistance training in older and younger men and women	15
Jette and colleagues	77	Are performance-based measures sufficiently reliable for use in multicenter trials?	15

Note: These articles are the ones most cited up to July 1, 2002.

narians to help unlock the secrets of successful aging (33–35). In the second most highly cited article, Bruunsgaard and colleagues (36) found that the cytokine, tumor necrosis factor alpha, is increased in centenarians and was highly associated with the development of Alzheimer's disease and atherosclerosis. Tumor necrosis factor alpha levels were associated with increased concentrations of interleukin-6 and c-reactive protein. Yeh and colleagues (37) found that megace decreased circulating cytokines and produced weight gain in older malnourished patients. Another highly cited article on centenarians was by Bagnara and colleagues (38). Their data suggested that maintaining the responsiveness of CD34+ cells to growth factors represents an important component in healthy aging.

Exercise and muscle strength has been one of the areas

that have drawn multiple highly cited articles (39–46). In particular, these articles have stressed the importance of measuring power and the role of exercise in enhancing functional status. The role of exercise in producing long-term improvement in function was disputed by Keysor and Jette (47). However, subsequently, an editorial (48) and a review article (49) argued strongly in favor of the long-term benefits of exercise. Interestingly, depression was found to be strongly associated with mortality in one of our most cited articles (50), and resistance exercise has been shown to have positive effects on mood in persons with depression (51).

Another area producing highly cited articles is frailty and the associated loss of muscle mass, that is, sarcopenia (52–57). These articles are leading to a more clear operational

Table 2. Most Cited Articles in *Journals of Gerontology Series A* in 2000

Author	Ref. No.	Title	Citations
King and colleagues	43	Comparative effects of two physical activity programs on measured and perceived physical functioning and other health-related quality of life outcomes in older adults	19
Guralnik and colleagues	52	Lower extremity function and subsequent disability: consistency across studies, predictive models, and value of gait speed alone compared with the short physical performance battery	18
Evans	44	Exercise strategies should be designed to increase muscle power	16
Foldvari and colleagues	42	Association of muscle power with functional status in community-dwelling elderly women	15
Martin and colleagues	45	Maximal power across the lifespan	15
Rubenstein and colleagues	46	Effects of a group exercise program on strength, mobility, and falls among fall-prone elderly men	13
Bagnara and colleagues	38	Hemopoiesis in healthy old people and centenarians: well-maintained responsiveness of CD34+ cells to hemopoietic growth factors and remodeling of cytokine network	12
Huang and colleagues	78	Ubiquitous overexpression of CuZn superoxide dismutase does not extend life span in mice	12
Astin and colleagues	59	Complementary and alternative medicine use among elderly persons: one-year analysis of a Blue Shield Medicare supplement	11
Petropoulos and colleagues	79	Increase of oxidatively modified protein is associated with a decrease of proteasome activity and content in aging epidermal cells	11
Tucker and colleagues	80	Self-reported prevalence and health correlates of functional limitation among Massachusetts elderly Puerto Ricans, Dominicans, and a non-Hispanic white neighborhood comparison group	10
Shumway-Cook & Woollacott	81	Attentional demands and postural control: the effect of sensory context	10
Roubenoff & Hughes	53	Sarcopenia: current concepts	10
Miller and colleagues	64	Differential longevity in mouse stocks selected for early life growth trajectory	10
Fried and colleagues	54	Preclinical mobility disability predicts incident mobility disability in older women	10

Note: These articles are the ones most cited up to July 1, 2002.

Table 3. Most Cited Articles in *Journals of Gerontology Series A* in 2001

Author	Ref. No.	Title	Citations
Fried and colleagues	55	Frailty in older adults: evidence for a phenotype	13
Blazer and colleagues	50	The association of depression and mortality in elderly persons: a case for multiple, independent pathways	9
Kenny and colleagues	18	Effects of transdermal testosterone on bone and muscle in older men with low bioavailable testosterone levels	8
Miller and colleagues	65	Interpretation, design, and analysis of gene array expression experiments	8
Dozmorov and colleagues	66	Array-based expression analysis of mouse liver genes: effect of age and of the longevity mutant Prop1(df)	7
Gillick	56	Pinning down frailty	7
Mathey and colleagues	25	Flavor enhancement of food improves dietary intake and nutritional status of elderly nursing home residents	7
Lal and colleagues	5	Effects of caloric restriction on skeletal muscle mitochondrial proton leak in aging rats	6
Bartke and colleagues	2	Genes that prolong life: relationships of growth hormone and growth to aging and life span	6
Meneilly & Tessier	82	Diabetes in elderly adults	6
Newman and colleagues	57	Associations of subclinical cardiovascular disease with frailty	5
Pavol and colleagues	83	Mechanisms leading to a fall from an induced trip in healthy older adults	5
Weindruch and colleagues	6	Caloric restriction mimetics: metabolic interventions	5

Note: These articles are the ones most cited up to July 1, 2002.

definition of frailty and an increased understanding of the pathogenesis of frailty (58). These studies should lead to a rational intervention system to prevent the development of frailty and to actively treat this syndrome once it has developed.

Astin and colleagues (59), in their most cited article, highlighted the increasing number of older persons who are using complementary and alternative medicine. This use has also been reported in other recent articles in the *Journal* (60,61). These articles stress the need for geriatricians to have a greater awareness of the good, the bad, and the ugly among the emerging aspects of antiaging medicine (62).

It is my pleasure to note that Richard Miller's Kleemeier award lecture, entitled "Are there genes for aging?," has been highly cited (63). The important role of Dr. Miller in gerontology is highlighted by a number of other highly cited articles his group has published in the *Journal* (64–66).

Readers may have an interest in which articles are being highly cited in the *Journal of the American Geriatrics Society*. In 1999, the two most cited articles both dealt with psychotropic drugs (67,68). Other highly cited articles dealt with the role of interleukin-6 and disability (69), and a review article dealt with caloric restriction (70). In 2000, the most cited article thus far is by Ensrud and colleagues (71), which demonstrated that women with prevalent vertebral deformities have an increased risk of death and hospitalization. In 2001, two articles on inappropriate drug use have both been cited six times (72,73).

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Address correspondence to John E. Morley, MB, BCh, Division of Geriatric Medicine, Saint Louis University School of Medicine, 1402 S. Grand Boulevard, M238, St. Louis, MO 63104. E-mail: morley@slu.edu

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