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# High Impact and Highly Cited Peer-Reviewed Journal Article Publications by Canadian Occupational Therapy Authors: A Bibliometric Analysis

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## ABSTRACT

A bibliometric analysis of high impact and highly cited peer-reviewed literature published between 1992 and 2016 by Canadian occupational therapy authors that were included in the Science Citation Index-Expanded (SCI-E) or Social Sciences Citation Index (SSCI) was completed. To complete the analysis, journal article titles, abstracts, author details, and keywords were searched. A second-filter identified articles where the first or corresponding author had a Canadian affiliation and occupational therapy qualification. The total number of times an article was cited since its initial publication and during 2016 in Web of Science Core Collection was recorded. A total of 919 retrieved articles met the inclusion criteria with 18 articles having 5 or more citations during 2016 alone and another 34 articles having 50 or more citations since their initial publication date. The top three journals where high impact and highly-cited articles were published were *Archives of Physical Medicine and Rehabilitation*, *Disability and Rehabilitation*, and *American Journal of Occupational Therapy*. The three institutions that generated the largest number of high impact and highly cited articles were McGill University, University of Toronto, and University of British Columbia. Therefore, as of 2016, Canadian occupational therapy authors published 18 high impact and 34 highly cited articles.

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## KEYWORDS

Authors; bibliometrics; impact factor; journal manuscripts; peer-review; publication metrics

## Introduction

Occupational therapy journals play an important role for the profession. They are a repository of the discipline's cognate body of knowledge and house the evidence of the effectiveness of occupational therapy interventions (Case-Smith & Powell, 2008). Occupational therapists also publish their empirical work in a number of interdisciplinary-refereed journals related to professional and clinical practice areas (e.g., education,

neurology, orthopedics, hand therapy, rehabilitation, pediatrics, developmental disabilities, psychiatry/mental health, psychology, public health, health sciences, geriatrics, vocational rehabilitation).

The oldest journal of occupational therapy was the *Archives of Occupational Therapy* published briefly from 1922 to 1924 by Williams and Wilkins, Baltimore, MD. In 1925, the journal title was changed to *Occupational Therapy and Rehabilitation* (OT&R) which continued until 1952 when the title was revised again to the *American Journal of Physical Medicine* and after that was no longer the official journal of the American Occupational Therapy Association (AOTA) (Frontera, 2012). Similarly, several other refereed occupational therapy journals with long histories of publication are “the *Canadian Journal of Occupational Therapy* (CJOT), 1933–present; *British Journal of Occupational Therapy* (BJOT), 1938–present; *Australian Occupational Therapy Journal* (AOTJ), 1952–present; *New Zealand Journal of Occupational Therapy* (NZJOT), 1953–present; and *South African Journal of Occupational Therapy* (SAJOT), 1970–present” (Brown, Ho, & Gutman, 2018, p. 2). The *American Journal of Occupational Therapy* (AJOT) was published by the American Occupational Therapy Association (AOTA) starting in 1947 (Andersen & Reed, 2017).

Currently, there are a number of other occupational therapy-specific English language journals that authors can submit their work to (see Table 1). As well, there are at least 15 other occupational therapy journals available on the Internet that publish primarily in another language such as Spanish, German, French, Hebrew, Japanese, or Chinese but include English abstracts or print some articles in English (e.g., *Cadernos de Terapia Ocupacional da UFSCar*, *Ergotherapie und Rehabilitation*, *Israel Journal of Occupational Therapy*, *Revista de Terapia Ocupacional*, *ErgOTHérapies*, *Journal of Taiwan Occupational Therapy Research and Practice*, *Japanese Journal of Clinical Occupational Therapy*).

The hallmark of any journal is the peer-review process which involves the review of submissions by a minimum of two reviewers. Some journals are now transitioning to an open peer review process whereby reviewer comments and author responses are published alongside the article itself. Journals may be sponsored by a professional society, association, or institution and then published by one of a number of recognized publishers (e.g., Sage, Cambridge University Press, Oxford University Press, Elsevier, Wiley-Blackwell, Springer, Taylor & Francis). For example, the *Irish Journal of Occupational Therapy* (IrJOT) is sponsored by the Irish Occupational Therapy Association whereas AJOT is managed editorially by AOTA. On the other hand, CJOT is sponsored by the Canadian Association of Occupational Therapists and BJOT by the British Association of

**Table 1.** Peer-reviewed English language occupational therapy and science journals.

- *American Journal of Occupational Therapy (AJOT)*\*\*
- *Canadian Journal of Occupational Therapy (CJOT)*\*\*
- *British Journal of Occupational Therapy (BJOT)*\*\*
- *Australian Occupational Therapy Journal (AOTJ)*\*\*
- *New Zealand Journal of Occupational Therapy (NZJOT)*
- *South African Journal of Occupational Therapy (SAJOT)*\*
- *Occupational Therapy in Health Care (OTHC)*
- *Physical and Occupational Therapy in Geriatrics (POTG)*
- *Occupational Therapy in Mental Health (OTMH)*
- *Annals of International Occupational Therapy (AIOT)*
- *Scandinavian Journal of Occupational Therapy (SJOT)*\*\*
- *Physical and Occupational Therapy in Pediatrics (POTP)*\*\*
- *Indian Journal of Occupational Therapy (InJOT)*\*
- *Irish Journal of Occupational Therapy (IrJOT)*\*
- *Occupational Therapy International (OTI)*\*\*/\*
- *Journal of Occupational Therapy Education (JOTE)*\*
- *World Federation of Occupational Therapists Bulletin (WFOTBu)*
- *Hong Kong Journal of Occupational Therapy (HKJOT)*\*\*
- *Korean Journal of Occupational Therapy (KJOT)*\*
- *Open Journal of Occupational Therapy (OJOT)*\*
- *Journal of Occupational Therapy, Schools & Early Intervention (JOTSEI)*
- *OTJR: Occupation, Participation & Health (OTJR)*\*\*
- *Japanese Journal of Occupational Therapy Research (JJOTR)*\*
- *Asian Journal of Occupational Therapy (AsJOT)*\*
- *Israel Journal of Occupational Therapy (IsJOT)*\*
- *Journal of Occupational Science (JOS)*

\*Denotes open access occupational therapy journals; OTI and OJOT both charge authors fees to publish in their open access journals while the other open access journals do not charge a fee to authors.

\*\*Denotes occupational therapy journals that are listed on the Web of Science and have an IF calculated for them.

Occupational Therapists/Royal College of Occupational Therapists; both are published by Sage Publications.

Traditionally journals were subscription based in which a fee was paid by an organization or individual to access the articles published in a respective journal. When a journal is published by a society or professional association, the annual membership fees for those groups commonly include a yearly subscription to their published journal. However, universities and other organizations now customarily purchase bulk subscriptions from publishers allowing access to a large number of journals grouped together. Presently, there is a concerted move toward open access journal publication in which articles are freely available to anyone with an internet connection. Non-open access journals are also increasingly providing the option for authors to pay for open access of their published articles. Open access articles are usually more highly cited than those published in subscription-based journals (Björk & Solomon, 2012; Li, Wu, Yan, & Li, 2018; Piwowar et al., 2018). *IrJOT*, *OJOT*, and *OTI* are all open access discipline-specific journals.

The move toward digitization and electronic journal publication has yielded a new wave of journal quality metrics (Brown & Gutman, 2018). Metrics are now available for two concepts of evaluating journal article

quality: 'high impact' and 'highly cited' (Brown, Ho, & Gutman, 2018; Gutman, Brown, & Ho, 2017). High-impact articles are those that have been cited by other authors shortly after initial publication (commonly within 1 year of publication). Highly cited articles are those that have accrued a large number of citations over the period of time since initial publication (commonly 5+ years) (Brown, Ho, Gutman, & Fong, 2018). Authors of either 'high impact' or 'highly cited' articles are perceived as generating high-quality research outputs and are frequently awarded accolades, funding, and recognition for their meritorious contributions to their respective fields (Carpenter, Cone, & Sarli, 2014). The primary means of determining which journal articles are deemed to be 'high impact' or 'highly cited' within a profession or academic subject area is to examine the citation rates of those respective journal articles and the authors linked to these citation rates (Ioannidis, Boyack, Small, Sorensen, & Klavans, 2014).

One measure used to evaluate the perceived quality of a journal versus individual journal articles is the Impact Factor (IF) (Garfield, 2006). The IF is a calculation based on the average number of times articles in a specific journal have been cited (both in the respective journal and in other journals), divided by the total number of articles published in that journal. Only a limited number of journals have been accepted into the Web of Science database that calculates and publishes journal IFs in the subject areas of social sciences, sciences, arts, and humanities. Likewise, only citations by other journals indexed in Web of Science are used to calculate a journal's IF. The Web of Science database, for example, indexes over 10,000 journals, whereas the Scopus database indexes over 15,000 journals. Thus, the calculation of IFs is quite biased and selective in its scope, and only limited merit and recognition should be extended to journals who are able to report their IF (Casadevall & Fang, 2014). Just because a journal is not included in the Web of Science database does not automatically infer that it is not of good quality or worthy of recognition (Lozano, Larivière, & Gingras, 2012). Many universities, funding bodies, government organizations, research institutes, and journal editors are presently moving away from sole focus on journal IFs and are considering alternative metrics (including Scimago Journal Rank, Scimago journal h-index, CiteScore, Source Normalized Impact per Paper, Eigenfactor Score, and Article Influence Score) (Kim & Chung, 2018).

In relation to occupational therapy journal publications, authors have published articles examining citation analysis (Johnson & Leising, 1986; Roberts, 1992), content analysis (Pearl, Brennan, Journey, Antill, & McPherson, 2014), and professional literature mapping (Potter, 2010). Similarly, studies of American, Australian, and British occupational therapy

authors and peer-reviewed literature have been published (Brown, Gutman, & Ho, 2018; Brown et al., 2018; Gutman et al., 2017). The intent of this paper is to present and discuss the findings of a bibliometric analysis of high impact and highly cited peer-reviewed journal articles authored by Canadian occupational therapists. The findings of this analysis will provide valuable insights about the status of scholarly productivity by Canadian occupational therapists.

## **Method**

### ***Bibliometric analysis***

Bibliometric analysis methods are used to generate quantitative information about written and published materials and is often based on content or citation analysis (Ellegaard & Wallin, 2015). In other words, bibliometrics are a set of methods used to quantitatively analyze technological, professional, scientific, and other types of empirical literature that involves the application of quantitative analysis to journal publications and their citation counts. With the advent of technology, scientometrics and webometrics have also emerged (Bar-Ilan, 2010). The most commonly referred to bibliometric measure related to journal publications is the IF. Bibliometric analyses can also be used to track and monitor publication trends in specific subject areas, by groups of authors or by countries. In the context of the current study, the use of bibliometric analysis methods allows high impact and highly cited peer-reviewed journal articles authored by Canadian occupational therapists to be investigated and profiled.

The most widespread publication metric applied to refereed journals is the IF. IFs are published annually for journals that are indexed in Thomson Reuters' Journal Citation Reports (JCR) and refer to the mean number of citations that journal articles receive from indexed journals in the preceding 2 or 5 year periods. For a journal to have a calculated IF, it needs to be included in one of two Thomson Reuters' databases: Science Citation Index Expanded (SCI-Expanded) or Social Sciences Citation Index (SSCI). SCI-Expanded and SSCI are both accessible through the Web of Science Core Collection (WSCC).

### ***Sources of articles for sample***

Data were obtained from the online versions of the Clarivate Analytics' Science Citation Index Expanded (SCI-E) and the Social Sciences Citation Index (SSCI) databases (updated December 13, 2017) of the Web of Science Core Collection (WSCC). Thomson Reuter's Journal Citation

Reports (JCR) 2016 indexes 8879 journals in 177 WSCC categories and 3241 journals in 57 WSCC categories in SCI-E and SSCI, respectively.

### **Search boundaries**

“Occupational therapy” or “occupational therapist(s)” and Canada were used as keywords to search journal article publication titles, abstracts, author details, keywords, and addresses. Only journal articles published within 1992–2016 were included in the search. The 1992–2016 temporal search boundary was used since articles were not indexed or listed on the Thomson Reuter’s JRC’s SCI-Expanded or SSCI prior to those dates. The document type of ‘article’ only included peer-reviewed journal articles and excluded other article types such as editorials, book reviews, and critiques of equipment. A total of 2240 articles were retrieved. A second filter was used to identify articles where the first or corresponding authors had a Canadian affiliation. First or corresponding authors also had to have a professional qualification as an occupational therapist. The second filter resulted in a further exclusion of 1321 articles and retention of 919 (41%) articles.

### **Citation count**

Full records were downloaded into Microsoft Excel 2013 and additional coding was manually performed. Journal articles were the only document type that was analyzed. IFs ( $IF_{2016}$ ) were retrieved from JCR 2016. The total number of times an article was cited in WSCC from its initial publication until the end of 2016 was recorded as  $TC_{2016}$  (Chuang, Wang, & Ho, 2011; Wang, Fu, & Ho, 2011). Citations per publication ( $CPP_{2016}$ ),  $TC_{2016}/\text{number of publications}$ , were also calculated (Ho, 2013). Additionally, total citations accrued in 2016 only (referred to as  $C_{2016}$ ) was also applied (Ho, 2012). The primary benefit of  $TC_{\text{year}}$  and  $C_{\text{year}}$  is that they are constant and ensure repeatability compared with the WSCC citation index (Fu, Wang, & Ho, 2012).

Ho and Hartley (2016) have suggested that it is not appropriate to use a single indicator to evaluate the overall ‘impact’ of a journal article. Therefore, we focused on the top journal articles within a  $C_{\text{year}}$  only, but not to the exclusion of those with a  $TC_{\text{year}}$  only, since some highly cited articles with a  $TC_{\text{year}}$  may not have had a high impact (e.g., a high number of citations) in recent years (Ho & Hartley, 2016). Hence, ‘highly cited’ articles were identified as having 50 or more citations over their total time-span since their initial publication (e.g.,  $TC_{2016} \geq 50$ ) (Brown, Gutman, Ho, & Fong, 2017). ‘High impact’ journal articles in the most recent year were

identified as having 5 or more citations in that respective year (e.g.,  $C_{2016} \geq 5$ ) (Gutman et al., 2017). In the context of this current study, the most recent year was 2016.

### **Authorship of articles**

In the WSCC database, the corresponding author was designated as the “reprint author,” whereas in this study the term “corresponding author” was used instead. In a single author article where authorship was unspecified, the single author was designated as both first and corresponding author. Likewise, for a single institution article, the institution was classified as both the first and corresponding author’s institution. Only the first and corresponding authors were considered in this study.

### **Contributions of institutions**

Contributions of institutions were determined by the affiliation addresses of the corresponding author. The number of high impact and highly cited articles by Canadian occupational therapy authors employed at institutions were calculated.

## **Results**

### **High impact journal articles**

When the citation rates were examined for the year 2016 only, 18 articles had been cited 5 or more times (e.g.,  $C_{2016} \geq 5$ ). These were classified as ‘high impact’ articles (see Table 2). Fifteen (83.3%) of the articles listed in Table 2 are also listed in Table 3 with a  $TC_{2016} > 50$ . The three articles in Table 2 that are not listed in Table 3 were published in 2008, 2010, and 2016, respectively.

Two (11.1%) of the articles with a  $C_{2016} \geq 5$  were published in *CJOT* (Hammell, 2009a,b), and one article was published each in *AJOT* (Gélinas et al., 1999) and *SJOT* (Hammell & Iwama, 2012). Four (22.2%) of the articles with a  $C_{2016} \geq 5$  were published in journals with a pediatric focus (e.g., *Pediatric Neurology*, *Journal of Autism and Developmental Disorders*, *Journal of Pediatrics*), three (16.7%) journals dealt with the subject area of adult physical rehabilitation (e.g., *Physical Therapy*, *Spinal Cord*, *Spine*), and three (16.7%) journals focused on rehabilitation research (e.g., *International Journal of Rehabilitation Research*, *Disability and Rehabilitation*, *Journal of Rehabilitation Research and Development*).



**Table 2.** Canadian authored 'high impact' occupational therapy articles by first or corresponding authors with  $C_{2016} \geq 5$  ( $N = 18$ ).

Rank ( $C_{2016}$ )	Rank ( $TC_{2016}$ )	Rank ( $C_0$ )	Rank (TCPY)	References
1 (41)	2 (242)	6 (0)	1 (27)	Blum, L., & Komer-Bitensky, N. (2008). Usefulness of the Berg Balance Scale in stroke rehabilitation: A systematic review. <i>Physical Therapy</i> , 88(5), 559–566. <a href="https://doi.org/10.2522/ptj.20070205">https://doi.org/10.2522/ptj.20070205</a>
2 (35)	1 (442)	6 (0)	2 (25)	Gélinas, I., Gauthier, L., McIntyre, M., & Gauthier, S. (1999). Development of a functional measure for persons with Alzheimer's Disease: The Disability Assessment for Dementia. <i>American Journal of Occupational Therapy</i> , 53(5), 471–481. doi: 10.5014/ajot.53.5.471.
3 (27)	1 (64)	6 (0)	3 (13)	Norouzi-gheidari, N., Archambault, P. S., & Fung, J. (2012). Effects of robot-assisted therapy on stroke rehabilitation in upper limbs: Systematic review and meta-analysis of the literature. <i>Journal of Rehabilitation Research and Development</i> , 49(4), 479–496. <a href="https://dx.doi.org/10.1682/JRRD.2010.10.0210">https://dx.doi.org/10.1682/JRRD.2010.10.0210</a>
4(18)	6a (103)	6 (0)	6 (10)	Kumaş-Tan, Z., Beagan, B., Loppie, C., MacLeod, A., & Frank, B. (2007). Measures of cultural competence: Examining hidden assumptions. <i>Academic Medicine</i> , 82(6), 548–557. doi: 10.1097/ACM.0b013e3180555a2d
5 (17)	7 (94)	1 (5)	4 (12)	Hammell, K. W. (2009a). Sacred texts: A skeptical exploration of the assumptions underpinning theories of occupation. <i>Canadian Journal of Occupational Therapy</i> , 76(1), 6–13. <a href="https://doi.org/10.1177/000841740907600105">https://doi.org/10.1177/000841740907600105</a>
6 (15)	12 (38)	6 (0)	16 (4.2)	Miller, W. C., Anton, H. A., & Townson, A. F. (2008). Measurement properties of the CESD scale among individuals with spinal cord injury. <i>Spinal Cord</i> , 46(4), 287–292. doi:10.1038/sj.sc.3102127
7 (12)	11 (63)	6 (0)	9 (7.9)	Hammell, K. W. (2009b). Self-care, productivity, and leisure, or dimensions of occupational experience? Rethinking occupational "categories". <i>Canadian Journal of Occupational Therapy</i> , 76(2), 107–114. <a href="https://doi.org/10.1177/000841740907600208">https://doi.org/10.1177/000841740907600208</a>
8a (11)	16 (11)	1 (11)	5 (11)	Cameron, J. I., Chu, L. M., Matte, A., Tomlinson, G., Chan, L., Thomas, C., Friedrich, J. O. ... Canadian Critical Care Trials Group. (2016). One-year outcomes in caregivers of critically ill patients. <i>New England Journal of Medicine</i> , 374(19), 1831–1841. doi: 10.1056/NEJMoal511160
8b (11)	9a (66)	6 (0)	14 (6.0)	Rudman, D. L., Friedland, J., Chipman, M., Sciorino, P. (2006). Holding on and letting go: The perspectives of pre-seniors and seniors on driving self-regulation in later life. <i>Canadian Journal of Aging</i> , 25(1), 65–76.
8c (11)	13 (33)	6 (0)	15 (4.7)	Esmail, S., Darry, K., Walter, A., & Knupp, H. (2010). Attitudes and perceptions towards disability and sexuality. <i>Disability and Rehabilitation</i> , 32(14), 1148–1155. <a href="https://doi.org/10.3109/09638280903419277">https://doi.org/10.3109/09638280903419277</a>
8d (11)	6b (103)	6 (0)	10a (7.4)	Mandich, A. D., Polatajko, A. D., Rodger, S., (2003). Rites of passage: Understanding participation of children with developmental coordination disorder. <i>Human Movement Science</i> , 22(4–5), 583–595. <a href="https://doi.org/10.1016/j.humov.2003.09.011">https://doi.org/10.1016/j.humov.2003.09.011</a>
8e (11)	3 (132)	6 (0)	8a (8.3)	Mulholland, S., & Wyss, U. P. (2001). Activities of daily living in non-Western cultures: Range of motion requirements for hip and knee joint implants. <i>International Journal of Rehabilitation Research</i> , 24(3), 191–198.
9a (10)	8 (67)	4 (2)	7 (8.4)	Majnemer, A., Limperopoulos, C., Shevell, M. I., Rohlicek, C., Rosenblatt, B., Tchervenkov, C. (2009). A new look at outcomes of infants with congenital heart disease. <i>Pediatric Neurology</i> , 40(3), 197–204. doi: 10.1016/j.pediatrneurol.2008.09.014.

9b (10)	9b (66)	6 (0)	8b (8.3)	Jasmin, E., Couture, M., McKinley, P., Reid, G., Fombonne, E., & Gisel, E. (2009). Sensori-motor and daily living skills of preschool children with autism spectrum disorders. <i>Journal of Autism and Developmental Disorders</i> , 39, 231–241. <a href="https://doi.org/10.1007/s10803-008-0617-z">https://doi.org/10.1007/s10803-008-0617-z</a>
9c (10)	5 (126)	5 (1)	10b (7.4)	Limperopoulos, C., Majnemer, A., Shevell, M. I., Rosenblatt, B., Rohlicek, C., Tchervenkov, C. (2000). Neurodevelopmental status of newborns and infants with congenital heart defects before and after open heart surgery. <i>The Journal of Pediatrics</i> , 137(5), 638–645. <a href="https://doi.org/10.1067/mpd.2000.109152">https://doi.org/10.1067/mpd.2000.109152</a>
9d (10)	4 (128)	6 (0)	11 (7.1)	Limperopoulos, C., Majnemer, A., Shevell, M. I., Rosenblatt, B., Rohlicek, C., Tchervenkov, C. (1999). Neurologic status of newborns with congenital heart defects before open heart surgery. <i>Pediatrics</i> , 103(2), 402–408. doi: 10.1542/peds.103.2.402 (Pediatrics)
9e (10)	15 (120)	2 (4)	39 (6.7)	Wicks, P., Stamford, J., Grootenhuis, M.A., & Haverman, L. (2014). Innovations in e-health. <i>Quality of Life Research</i> , 23(1), 195–2003. <a href="https://doi.org/10.1007/s11136-013-0458-x">https://doi.org/10.1007/s11136-013-0458-x</a>
9f (10)	14 (31)	6 (0)	13 (6.2)	Hammell, K. R. W., & Iwama, M. K. (2012). Well-being and occupational rights: an imperative for critical occupational therapy. <i>Scandinavian Journal of Occupational Therapy</i> , 19(5), 385–394. doi: 10.3109/11038128.2011.611821.

$TC_{2016}$ : total citations from Web of Science Core Collection since publication to the end of 2016;  $C_{2016}$ : citations in 2016 only;  $C_0$ : citations in publication year only;  $TCPY$ : total citations per year,  $TC_{2106}$ /year.

**Table 3.** Canadian authored 'highly cited' occupational therapy articles as first or corresponding authors with *Total Citations*<sub>2016</sub> ≥ 50, 1992–2016 (*N* = 34).

Rank ( <i>TC</i> <sub>2016</sub> )	Rank ( <i>C</i> <sub>2016</sub> )	Rank ( <i>C</i> <sub>o</sub> )	Rank (TCPY)	Citation
1 (442)	2 (35)	4 (0)	2 (26)	Gélinas, I., Gauthier, L., McIntyre, M., & Gauthier S. (1999). Development of a functional measure for persons with Alzheimer's disease: The Disability Assessment for Dementia. <i>American Journal of Occupational Therapy</i> , 53(5), 471–481. doi: 10.5014/ajot.53.5.471.
2 (242)	1 (41)	4 (0)	1 (30)	Blum, L., & Komer-Bitensky, N. (2008). Usefulness of the Berg Balance Scale in stroke rehabilitation: A systematic review. <i>Physical Therapy</i> , 88(5), 559–566. <a href="https://doi.org/10.2522/ptj.20070205">https://doi.org/10.2522/ptj.20070205</a>
3 (177)	10a (8)	4 (0)	6a (10)	Beaton, D., & Richards, R. R. (1998). Assessing the reliability and responsiveness of 5 shoulder questionnaires. <i>Journal of Shoulder and Elbow Surgery</i> , 7(6), 565–572.
4 (166)	13a (5)	4 (0)	6b (10)	Beaton, D. E. (2000). Understanding the relevance of measured change through studies of responsiveness. <i>Spine</i> , 25(24), 3192–3199.
5 (141)	15a (3)	3 (1)	14 (7.1)	Friedland, J., Renwick, R., & Mccoll, M. (2010). Coping and social support as determinants of quality of life in HIV/AIDS. <i>AIDS Care</i> , 8(1), 15–32. <a href="https://doi.org/10.1080/09540129650125966">https://doi.org/10.1080/09540129650125966</a>
6 (139)	9a (9)	4 (0)	6c (10)	Limperopoulos, C., Majnemer, A., Shevell, M. I., Rohlicek, R., Rosenblatt, B., Tchervenkov, C., & Darwish, H. Z. (2002). Predictors of developmental disabilities after open heart surgery in young children with congenital heart defects. <i>The Journal of Pediatrics</i> , 141(1), 51–58. <a href="https://doi.org/10.1067/mpd.2002.125227">https://doi.org/10.1067/mpd.2002.125227</a>
7 (132)	7a (11)	4 (0)	9 (8.8)	Mulholland, S., & Wyss, U. P. (2001). Activities of daily living in non-Western cultures: Range of motion requirements for hip and knee joint implants. <i>International Journal of Rehabilitation Research</i> , 24(3), 191–198.
8a (128)	13b (5)	4 (0)	12a (7.5)	Unruh, A. M., Ritchie, J., & Merskey, H. (1999). Does gender affect appraisal of pain and pain coping strategies? <i>The Clinical Journal of Pain</i> , 75(1), 31–40. doi: 10.1177/1362361301005001003
8b (128)	8a (10)	4 (0)	12b (7.5)	Limperopoulos, C., Majnemer, A., Shevell, M. I., Rosenblatt, B., Rohlicek, C., & Tchervenkov, C. (1999). Neurologic status of newborns with congenital heart defects before open heart surgery. <i>Pediatrics</i> , 103(2), 402–408. doi: 10.1542/peds.103.2.402
9 (126)	8b (10)	3 (1)	11a (7.9)	Limperopoulos, C., Majnemer, A., Shevell, M. I., Rosenblatt, B., Rohlicek, C., & Tchervenkov, C. (2000). Neurodevelopmental status of newborns and infants with congenital heart defects before and after open heart surgery. <i>The Journal of Pediatrics</i> , 137(5), 638–645. <a href="https://doi.org/10.1067/mpd.2000.109152">https://doi.org/10.1067/mpd.2000.109152</a>
10 (109)	10b (8)	3 (1)	13 (7.3)	Koning, C. & Magill-Evans, J. (2001). Social and language skills in adolescent boys with Asperger Syndrome. <i>Autism</i> , 5(1), 23–36. doi: 10.1177/1362361301005001003
11(107)	14a (4)	4 (0)	17 (6.3)	Kim, P., Warren, S., Madill, H., & Hadley, M. (1999). Quality of life of stroke survivors. <i>Quality of Life Research</i> , 8(4), 293–301.
12a (103)	4 (18)	4 (0)	5 (11)	Kumaş-Tan, Z., Beagan, B., Loppie, C., MacLeod, A., & Frank, B. (2007). Measures of cultural competence: Examining hidden assumptions. <i>Academic Medicine</i> , 82(6), 548–557. doi: 10.1097/ACM.0b013e3180555a2d
12b (103)	7a (11)	4 (0)	11b (7.9)	Mandich, A. D., Polatajko, A. D., Rodger, S., (2003). Rites of passage: Understanding participation of children with developmental coordination disorder. <i>Human Movement Science</i> , 22(4–5), 583–595. <a href="https://doi.org/10.1016/j.humov.2003.09.011">https://doi.org/10.1016/j.humov.2003.09.011</a>
13 (97)	17a (1)	3 (1)	22 (4.6)	Majnemer, A., & Shevell, M. I. (1995). Diagnostic yield of the neurologic assessment of the developmentally delayed child. <i>The Journal of Pediatrics</i> , 127(2), 193–199. doi: <a href="https://doi.org/10.1016/S0022-3476(95)70294-6">https://doi.org/10.1016/S0022-3476(95)70294-6</a>
14 (94)	5 (17)	1 (5)	4 (13)	Hammell, K. W. (2009a). Sacred texts: A skeptical exploration of the assumptions underpinning theories of occupation. <i>Canadian Journal of Occupational Therapy</i> , 76(1), 6–13. <a href="https://doi.org/10.1177/000841740907600105">https://doi.org/10.1177/000841740907600105</a>

15 (89)	14b (4)	4 (0)	18 (5.9)	Limperopoulos, C., Majnemer, A., Shevell, M. I., Rosenblatt, B., Rohlicek, C., Tchervenkov, C. & Darwish, H. Z. (2001). Functional limitations in young children with congenital heart defects after cardiac surgery. <i>Pediatrics</i> , 108(6), 1325–1331. doi: 10.1542/peds.108.6.1325
16 (87)	18a (0)	3 (1)	23 (4.1)	Dawson, D. R., & Chipman, M. (1995). The disablement experienced by traumatically brain-injured adults living in the community. <i>Brain Injury</i> , 9(4), 339–353.
17 (71)	17b (1)	4 (0)	22 (3.9)	Colantonio, A., Dawson, D. R., & McLellan, B. A. (1998). Head injury in young adults: long-term outcome. <i>Archives of Physical Medicine and Rehabilitation</i> , 79(5), 550–558.
18a (70)	10c (8)	4 (0)	15 (7.0)	Rudman, D. L. (2006). Shaping the active, autonomous and responsible modern retiree: An analysis of discursive technologies and their links with neo-liberal political rationality. <i>Aging &amp; Society</i> , 26(1), 181–201. <a href="https://doi.org/10.1017/S0144686X05004253">https://doi.org/10.1017/S0144686X05004253</a>
18b (70)	14c (4)	4 (0)	21 (4.7)	Miller, L. T., Polatajko, H. J., Missiuna, C., Mandich, A. D., & Macnab, J. J. (2001). A pilot trial of cognitive treatment for children with developmental coordination disorder. <i>Human Movement Science</i> , 20(1-2), 183–210.
18c (70)	15b (3)	4 (0)	22 (4.4)	Majnemer, A., Riley, P., Shevell, M., Birnbaum, R., Greenstone, H., & Coates, A. L. (2000). Severe bronchopulmonary dysplasia increases risk for later neurological and motor sequelae in preterm survivors. <i>Developmental Medicine &amp; Child Neurology</i> , 42, 53–60. doi: 10.1111/j.1469-8749.2000.tb00025.x
19 (69)	9a (9)	4 (0)	10 (8.6)	Beagan, B., Chapman, G. E., D'Sylva, A., Bassett, B. R. (2008). It's just easier for me to do it: Rationalizing the family division of foodwork. <i>Sociology</i> , 42(4), 653–671. <a href="https://doi.org/10.1177/0038038508091621">https://doi.org/10.1177/0038038508091621</a>
20 (67)	8c (10)	2 (2)	6d (10)	Majnemer, A., Limperopoulos, C., Shevell, M. I., Rohlicek, C., Rosenblatt, B., Tchervenkov, C. (2009). A new look at outcomes of infants with congenital heart disease. <i>Pediatric Neurology</i> , 40(3), 197–204. doi: 10.1016/j.pediatrneurol.2008.09.014.
21a (66)	8d (10)	4 (0)	7 (9.4)	Jasmin, E., Couture, M., McKinley, P., Reid, G., Fombonne, E., & Gisel, E. (2009). Sensori-motor and daily living skills of preschool children with autism spectrum disorders. <i>Journal of Autism and Developmental Disorders</i> , 39, 231–241. <a href="https://doi.org/10.1007/s10803-008-0617-z">https://doi.org/10.1007/s10803-008-0617-z</a>
22b (66)	7c (11)	4 (0)	16 (6.6)	Rudman, D. L., Friedland, J., Chipman, M., & Sciortino, P. (2006). Holding on and letting go: The perspectives of pre-seniors and seniors on driving self-regulation in later life. <i>Canadian Journal of Aging</i> , 25(1), 65–76.
23 (65)	12a (6)	3 (1)	20 (5.0)	Beagan, B. L. (2003). Teaching social and cultural awareness to medical students: "it's all very nice to talk about it in theory, but ultimately it makes no difference". <i>Academic Medicine</i> , 78(6), 605–614.
24 (64)	3 (27)	4 (0)	3 (16)	Norouzi-Gheidari, N., Archambault, P. S., & Fung, J. (2012). Effects of robot-assisted therapy on stroke rehabilitation in upper limbs: Systematic review and meta-analysis of the literature. <i>Journal of Rehabilitation Research and Development</i> , 49(4), 479–496. <a href="http://dx.doi.org/10.1682/JRRD.2010.10.0210">http://dx.doi.org/10.1682/JRRD.2010.10.0210</a>
25 (63)	6 (12)	4 (0)	7 (9.0)	Hammell, K. W. (2009b). Self-care, productivity, and leisure, or dimensions of occupational experience? Rethinking occupational "categories". <i>Canadian Journal of Occupational Therapy</i> , 76(2), 107–114. <a href="https://doi.org/10.1177/000841740907600208">https://doi.org/10.1177/000841740907600208</a>
26a (56)	12b (6)	4 (0)	19 (5.6)	Korner-Bitensky, N., Bitensky, J., Sofer, S., Man-Son-Hing, M., & Gelinas, I. (2006). Driving evaluation practices of clinicians working in the United States and Canada. <i>American Journal of Occupational Therapy</i> , 60(4), 428–434.
26b (56)	16a (2)	3 (1)	24 (4.0)	Shaw, L., Segal, R., Polatajko, H., & Harburn, K. (2002). Understanding return to work behaviours: promoting the importance of individual perceptions in the study of return to work. <i>Disability and Rehabilitation</i> , 24(4), 185–195.

(continued)

Table 3. Continued.

Rank ( $TC_{2016}$ )	Rank ( $C_{2016}$ )	Rank ( $C_0$ )	Rank (TCPY)	Citation
27a (52)	11 (7)	4 (0)	25 (3.3)	Kirsh, B. (2000). Work, workers, and workplaces: A qualitative analysis of narratives of mental health consumers. <i>Journal of Rehabilitation</i> , 66(4), 24–30.
27b (52)	16b (2)	3 (1)	27 (2.5)	Polatajko, H. J., Macnab, J. J., Anstett, B., Malloy-Miller, T., Murphy, K. & Noh, S. (1995). A clinical trial of the process-oriented treatment approach for children with developmental co-ordination disorder. <i>Developmental Medicine &amp; Child Neurology</i> , 37, 310–319. doi: 10.1111/j.1469-8749.1995.tb12009.x
27c (52)	18b (0)	4 (0)	28 (2.4)	Packer, T. L., Sauriol, A., & Brouwer, B. (1994). Fatigue secondary to chronic illness: Postpolio syndrome, chronic fatigue syndrome, and multiple sclerosis. <i>Archives of Physical Medicine &amp; Rehabilitation</i> , 75(10), 1122–1126.
28 (51)	18c (0)	4 (0)	26 (3.0)	Dubouloz, C. J., Egan, M., Vallerand, J., & von Zweck, C. (1999). Occupational therapists' perceptions of evidence-based practice. <i>American Journal of Occupational Therapy</i> , 53(5), 445–453.

$TC_{2016}$ : total citations from Web of Science Core Collection since publication to the end of 2016;  $C_{2016}$ : citations in 2016 only;  $C_0$ : citations in publication year only; TCPY: total citations per year,  $TC_{2106}$ /year.

### Highly-cited journal articles

The number of publication outputs generated by Canadian occupational therapy authors during the 1992–2016 time period that were listed in SCIE or SSCI was 2240 journal articles (see Figure 1). Refining the search strategy to include only first or corresponding authors who were occupational therapists with a Canadian affiliation, reduced this number to 919 articles. The total number of times an article was cited in another journal article indexed in WSCC from its initial publication date until the end of 2016 was reported as  $TC_{2016}$ . When the citation rates for these articles were examined, it was found that 34 articles were cited more than 50 times during the 1992–2016 time period (e.g.,  $TC_{2016} \geq 50$ ). These were classified as ‘highly cited’ articles (see Table 3). Of the 34 articles with a  $TC_{2016} > 50$ , 11 (32.3%) were published during the years 1992–1999, 21 (61.8%) were published during the 2000–2009 period, and 2 (5.9%) were published after 2010.

Three (8.8%) of the articles with a  $TC_{2016} > 50$  were published in *AJOT* (Gélinas, Gauthier, McIntyre, & Gauthier, 1999; Korner-Bitensky, Bitensky, Sofer, Man-Son-Hing, & Gelinas, 2006); and three (8.8%) in *CJOT* (Hammell, 2009a,b; Rudman, Friedland, Chipman, & Sciortino, 2006; Dubouloz, Egan, Vallerand, & von Zweck, 1999). Ten (29.4%) of the articles with a  $TC_{2016} > 50$  were published in a pediatric oriented journal (e.g., *Journal of Pediatrics*, *Pediatrics*, *Autism*, *Developmental Medicine and Child Neurology*, *Pediatric Neurology*, *Journal of Autism and Developmental Disorders*) while seven (20.6%) focused on adult physical rehabilitation (e.g., *Physical Therapy*, *Journal of Shoulder and Elbow Surgery*, *Clinical Journal of Pain*, *Archives of Physical Medicine and Rehabilitation*, *Brain Injury*). Two (5.9%) journals focused on the area of older adults (*Aging & Society*, *Canadian Journal of Aging*), and three (8.8%) dealt with the subject area of rehabilitation research (*International Journal of Rehabilitation Research*, *Disability and Rehabilitation*, *Journal of Rehabilitation*).

The journal articles authored by Canadian occupational therapists with the highest number of total citations (with a  $TC_{2016} > 125$ ) from 1992 to 2016 were (i) Gélinas et al. (1999) with a  $TC_{2016} = 442$ ; (ii) Blum and Korner-Bitensky (2008) with a  $TC_{2016} = 242$ ; (iii) Beaton and Richards (1998) with a  $TC_{2016} = 177$ ; (iv) Beaton (2000) with a  $TC_{2016} = 166$ ; (v) Friedland, Renwick, and Mccoll (2010) with a  $TC_{2016} = 141$ ; (vi) Limperopoulos et al. (2002) with a  $TC_{2016} = 139$ ; (vii) Mulholland and Wyss (2001) with a  $TC_{2016} = 132$ ; (viii) Unruh, Ritchie, and Merskey (1999) with a  $TC_{2016} = 128$ ; (ix) Limperopoulos et al. (1999) with a  $TC_{2016} = 128$ ; and (x) Limperopoulos et al. (2000) with a  $TC_{2016} = 125$ . Two of the articles (with a  $TC_{2016} > 125$ ) were published in the *Journal of Pediatrics* (Limperopoulos et al., 2000, 2002), two of the articles (with a  $TC_{2016} > 125$ ) were authored

by Beaton as the first author (Beaton, 2000; Beaton & Richards, 1998), while three articles (with a  $TC_{2016} > 125$ ) were authored by Limperopoulos as the first author (Limperopoulos et al., 1999, 2000, 2002) (see Table 3).

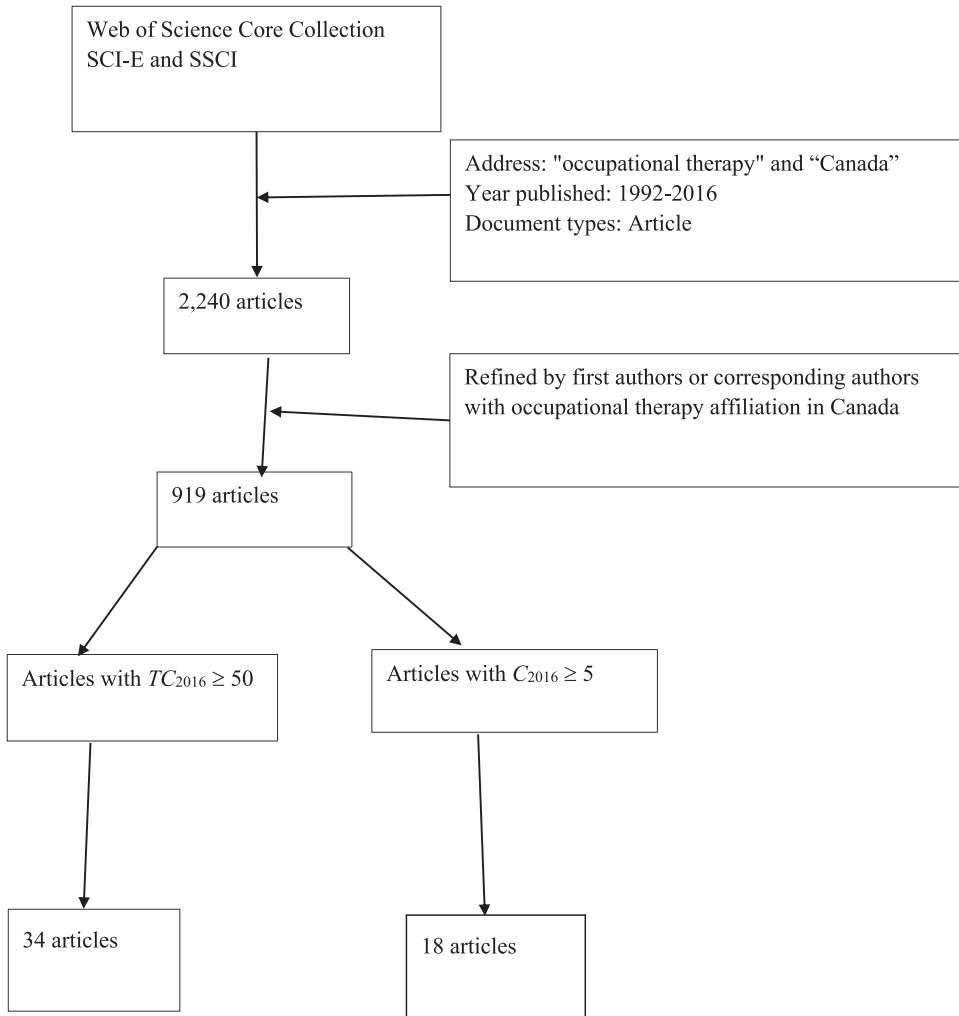
### **Web of Science Core Collection (WSSC) subject categories for highly-cited articles**

Based on the classification of subject categories in JCR 2016, the publication output data for Canadian occupational therapy authors were distributed across 13 WSSC categories in SCI-E and SSCI. The top WSSC subject categories for articles with 5 or more citations in the year 2016 (e.g.,  $C_{2016} \geq 5$ ) were *rehabilitation* with 47 articles (40%), *clinical neurology* with 26 articles (22%), *neurosciences* with 15 articles (13%), and *sports sciences* with 14 articles (12%). The WSSC subject category of *pediatrics* had both a  $C_{2016} > 5$  with 8 articles (11%) and a  $TC_{2016} > 50$  with 13 articles (11%) (see Table 4). The top WSSC subject category with a  $TC_{2016} > 50$  were *rehabilitation* with 28 articles (37%), *sport sciences* with 17 articles (22%), *clinical neurology* with 14 articles (18%), and *neurosciences* with 10 articles (13%) (see Table 4).

### **Journals with high impact and highly cited articles published**

The five most frequent journals in which high impact articles by Canadian occupational therapy authors were published were *Archives of Physical Medicine and Rehabilitation* (seven articles, 5.9%), *Disability and Rehabilitation* (seven articles, 5.9%), *AJOT* (four articles, 3.4%), *Spinal Cord*, (three articles, 3.4%), and *Stroke* (three articles, 3.4%) (see Table 5). The four most frequent journals in which highly cited articles by Canadian occupational therapy authors published were *Archives of Physical Medicine and Rehabilitation* (10 articles, 13%), *AJOT* (3 articles, 3.9%), *Physical Therapy* (3 articles, 3.9%), and *Journal of Pediatrics* (3 articles, 3.9%) (see Table 5). As noted above, there was a definite trend for Canadian occupational therapy authors to publish articles in a number of interdisciplinary journals including *Disability and Rehabilitation*, *Spinal Cord*, *Stroke*, *Developmental Medicine and Child Neurology*, *Academic Medicine*, and *Experimental Brain Research* (see Table 5).

The journals with the highest  $IF_{2016}$  in which Canadian occupational therapy authors published highly cited articles (e.g.,  $TC_{2016} > 50$ ) included *Stroke* ( $IF_{2016} = 6.032$ ), *Academic Medicine* ( $IF_{2016} = 5.255$ ), *Journal of Pediatrics* ( $IF_{2016} = 3.874$ ), *Archives of Physical Medicine and Rehabilitation* ( $IF_{2016} = 3.289$ ), and *Developmental Medicine and Child Neurology* ( $IF_{2016} = 3.116$ ). The journals with the highest  $IF_{2016}$  in which Canadian



**Figure 1.** Search strategy to retrieve Canadian authored occupational therapy articles with  $Total\ Citations_{2016} \geq 50$  and  $Citations_{2016} \geq 5$ .

occupational therapy authors published high impact articles (e.g.,  $C_{2016} \geq 10$ ) were *Archives of Physical Medicine and Rehabilitation* ( $IF_{2016} = 3.289$ ), *Disability and Rehabilitation* ( $IF_{2016} = 1.804$ ), *AJOT* ( $IF_{2016} = 2.053$ ), *Spinal Cord* ( $IF_{2016} = 1.870$ ), *Stroke* ( $IF_{2016} = 6.032$ ), *Developmental Medicine and Child Neurology* ( $IF_{2016} = 3.116$ ), *Journal of Burn Care & Research* ( $IF_{2016} = 1.349$ ), and *Physical Therapy* ( $IF_{2016} = 2.764$ ).

The top five most highly cited articles from 1992 to 2016 written by Canadian occupational therapy authors were published in *AJOT* (Gélinas et al. 1999;  $IF_{2016} = 2.053$ ), *Physical Therapy* (Blum & Korner-Bitensky, 2008;  $IF_{2016} = 2.764$ ), *Journal of Shoulder and Elbow Surgery* (Beaton & Richards, 1998;  $IF_{2016} = 2.849$ ), *Spine* (Beaton, 2000;  $IF_{2016} = 3.024$ ), and



**Table 4.** Top Web of Science Subject categories of highly cited occupational therapy journal articles by Canadian authors.

Web of Science Subject category	Number of $Citations_{2016} \geq 5$ articles (highly cited)	Number of $Total Citations_{2016} \geq 50$ articles (high impact)
Rehabilitation	47 (40%)	28 (37%)
Clinical Neurology	26 (22%)	14 (18%)
Neurosciences	15 (13%)	10 (13%)
Sport Sciences	14 (12%)	17 (22%)
Pediatrics	13 (11%)	8 (11%)
Public, Environmental and Occupational Health	9 (7.6%)	6 (7.9%)
Health Care Sciences and Services	8 (6.8%)	6 (7.9%)
Surgery	7 (5.9%)	2 (2.6%)
Orthopedics	5 (4.2%)	7 (9.2%)
Health Policy and Services	4 (3.4%)	3 (3.9%)
Peripheral Vascular Disease	4 (3.4%)	2 (2.6%)
Developmental Psychology	4 (3.4%)	2 (2.6%)
Experimental Psychology	4 (3.4%)	3 (3.9%)

*AIDS Care* (Friedland et al., 2010;  $IF_{2016}=2.095$ ). The top five articles with the highest impact from 1992 to 2016 written by Canadian occupational therapy authors were published in *Physical Therapy* (Blum & Korner-Bitensky, 2008;  $IF_{2016}=2.764$ ), *AJOT* (Gélinas et al. 1999;  $IF_{2016}=2.053$ ), *Journal of Rehabilitation Research and Development* (Norouzi-Gheidari, Archambault, & Fung, 2012;  $IF_{2016}=1.043$ ), *Academic Medicine* (Kumaş-Tan, Beagan, Loppie, MacLeod, & Frank, 2007;  $IF_{2016}=5.255$ ), and *CJOT* (Hammell, 2009;  $IF_{2016}=1.255$ ).

### ***Institutional publication performance of highly cited and high impact journal articles***

Table 6 reports the top 10 institutions ranked by the number of highly cited and high impact articles published by Canadian occupational therapy authors. The top five ranking institutions that published the largest percentage of highest impact articles (e.g.,  $C_{2016} \geq 5$ ) by Canadian occupational therapy authors were McGill University (48%), University of Toronto (23%), University of British Columbia (13%), University of Western Ontario (12%), and University of Montreal (11%). The three institutions that published the highest number of high impact journal articles (e.g.,  $C_{2016} \geq 5$ ) with Canadian first and corresponding authors were McGill University (47%, 44%), University of Toronto (16%, 15%), and University of Western Ontario (10%, 10%) (see Table 6).

The top five ranking institutions producing the most highly cited published articles (e.g.,  $TC_{2016} > 50$ ) by Canadian occupational therapists were McGill University (57%); University of Toronto (22%); University of Western Ontario (12%); Jewish Rehabilitation Hospital, Montreal, Quebec (11%); and Dalhousie University (9.2%). The three institutions that published the highest number of highly cited journal articles (e.g.,  $TC_{2016} > 50$ )

**Table 5.** Journals where high impact and highly cited Canadian occupational therapy articles indexed on SCI-E or SSCI, 1992–2016, are published.

Journal	<i>TP</i> (%) <i>TC</i> <sub>2016</sub>	<i>TP</i> (%) <i>C</i> <sub>2016</sub>	<i>IF</i> <sub>2016</sub>	Web of Science Subject category
Archives of Physical Medicine and Rehabilitation	10 (13)	7 (5.9)	3.289	Rehabilitation; Sport Sciences
Disability and Rehabilitation	1 (1.3)	7 (5.9)	1.804	Rehabilitation
American Journal of Occupational Therapy	3 (3.9)	4 (3.4)	2.053	Rehabilitation
Spinal Cord	2 (2.6)	4 (3.4)	1.870	Clinical Neurology; Rehabilitation
Stroke	2 (2.6)	4 (3.4)	6.032	Clinical Neurology; Peripheral Vascular Disease
Canadian Journal of Occupational Therapy	2 (2.6)	3 (2.5)	1.255	Rehabilitation
Developmental Medicine and Child Neurology	2 (2.6)	3 (2.5)	3.116	Clinical Neurology; Pediatrics
Journal of Burn Care & Research	N/A	3 (2.5)	1.349	Emergency Medicine; Dermatology; Surgery
Physical Therapy	3 (3.9)	3 (2.5)	2.764	Orthopedics; Rehabilitation
Academic Medicine	2 (2.6)	2 (1.7)	5.255	Scientific Disciplines Education; Health Care Sciences and Services
Clinical Rehabilitation	N/A	2 (1.7)	2.823	Rehabilitation
Experimental Brain Research	2 (2.6)	2 (1.7)	1.917	Neurosciences
Journal of Neuroengineering and Rehabilitation	1 (1.3)	2 (1.7)	3.516	Biomedical Engineering; Neurosciences; Rehabilitation
Journal of Pediatrics	3 (3.9)	2 (1.7)	3.874	Pediatrics
Quality of Life Research	1 (1.3)	2 (1.7)	2.344	Health Care Sciences and Services; Health Policy and Services; Public, Environmental and Occupational Health
Research in Developmental Disabilities	N/A	2 (1.7)	1.63	Special Education; Rehabilitation

*TC*<sub>2016</sub>: total citations from Web of Science Core Collection since publication to the end of 2016; *C*<sub>2016</sub>: citations in 2016 only; *TP*: total publications; *IF*<sub>2016</sub>: Impact Factor in 2016.

with Canadian first and corresponding authors were McGill University (57%, 55%), University of Toronto (12%, 11%), and the University of Western Ontario (9.2%, 9.2%) (see Table 6).

### **Canadian occupational therapy authors' publication performance**

Table 7 reports the top 11 Canadian occupational therapy authors who have published highly cited and high impact journal articles. H.J. Polatajko, University of Toronto; B. Beagan, Dalhousie University; and I. Gelinas, McGill University all published the largest number of high impact journal articles, each having authored 30 articles that received 5 or more citations

**Table 6.** Institutions of high-impact Canadian occupational therapy scholarship indexed on SCI-EXPANDED or SSCI, 1992–2016.

Institution	$C_{2016} \geq 5$ (high impact)			$TC_{2016} \geq 50$ (highly cited)		
	TP R (%)	FP R (%)	RP R (%)	TP R (%)	FP R (%)	RP R (%)
McGill University, Quebec	1 (48)	1 (47)	1 (44)	1 (57)	1 (57)	1 (55)
University of Toronto, Ontario	2 (23)	2 (16)	2 (15)	2 (22)	2 (12)	2 (11)
University of British Columbia, British Columbia	3 (13)	4 (7.6)	4 (7.6)	8 (3.9)	8 (2.6)	8 (2.6)
University of Western Ontario, Ontario	4 (12)	3 (10)	3 (10)	3 (12)	3 (9.2)	3 (9.2)
University of Montreal, Quebec	5 (11)	N/A	N/A	8 (3.9)	N/A	N/A
Jewish Rehabilitation Hospital, Montreal, Quebec	6 (8.5)	N/A	N/A	4 (11)	N/A	N/A
Dalhousie University, Nova Scotia	7 (7.6)	6 (5.1)	6 (5.1)	5 (9.2)	4 (5.3)	4 (5.3)
University of Alberta, Alberta	7 (7.6)	5 (6.8)	5 (6.8)	8 (3.9)	5 (3.9)	5 (3.9)
University of Laval, Quebec	9 (6.8)	N/A	N/A	8 (3.9)	N/A	N/A
McMaster University, Ontario	10 (5.9)	8 (0.85)	9 (0.85)	6 (5.3)	5 (3.9)	5 (3.9)

$TC_{2016}$ : total citations from Web of Science Core Collection since publication to the end of 2016;  $C_{2016}$ : citations in 2016 only; FP: number of first author articles; RP: number of corresponding authored articles; R: rank.

during 2016 alone. Next D.L. Rudman, University of Western Ontario; and K.W. Hammell, University of British Columbia each authored 14 high impact journal articles that received 5 or more citations during 2016. A. Colantonio, University of Toronto published the largest number of highly cited articles with a total of 49. D.L. Rudman, University of Western Ontario; K.W. Hammell, University of British Columbia; B. Beagan, Dalhousie University; and I. Gelinias, McGill University all published 21 highly cited articles, the next highest number. There is some commonality between Canadian occupational therapy authors of high impact and highly cited journal articles: D.L. Rudman, University of Western Ontario; K.W. Hammell, University of British Columbia; B. Beagan, Dalhousie University; and I. Gelinias, McGill University.

## Discussion

### High-impact journal articles

Eighteen high-impact journal articles were written and published by Canadian occupational therapy authors during 2016. In other words, for the year 2016, 18 journal articles had been cited 5 or more times (e.g.,  $C_{2016} \geq 5$ ). The majority of this body of work was published in interdisciplinary journals, while a small number of high impact articles were published in occupational therapy-specific journals (two in *CJOT*, and one each in *AJOT* and *SJOT*). Four of the 18 articles with a  $C_{2016} \geq 5$  were published in journals with a pediatric focus, three articles were related to adult physical rehabilitation, and three focused on rehabilitation research. In a study of American occupational therapy authors, high-impact journal articles similarly focused on pediatrics and adult physical rehabilitation, but also addressed geriatrics (Gutman et al., 2017).

**Table 7.** Most highly cited Canadian occupational therapists, 1992–2016.

Author	Affiliation	$C_{2016} \geq 5$ (high impact)			$TC_{2016} \geq 50$ (highly cited)		
		FP + RP (R)	FP (R)	RP (R)	FP + RP (R)	FP (R)	RP (R)
Majnemer, A.	McGill University	2 (4)	6 (2)	2 (4)	2 (6)	6 (2)	2 (6)
Korner-Bitensky, N.	McGill University	7 (3)	19 (1)	24 (1)	8 (4)	19 (1)	24 (1)
Colantonio, A.	University of Toronto	7 (3)	6 (2)	5 (3)	49 (1)	6 (2)	5 (3)
Hammell, K.W.	University of British Columbia	14 (2)	1 (3)	12 (2)	21 (2)	1 (3)	12 (2)
Limperopoulos, C.	McGill University	N/A	N/A	N/A	5 (5)	N/A	N/A
Polatajko, H. J.	University of Western Ontario / University of Toronto	30 (1)	N/A	N/A	11 (3)	N/A	N/A
Rudman, D. L.	University of Western Ontario	14 (2)	1 (3)	5 (3)	21 (2)	1 (3)	5 (3)
Beagan, B.	Dalhousie University	30 (1)	19 (1)	12 (2)	21 (2)	19 (1)	12 (2)
Gelinas, I.	McGill University	30 (1)	19 (1)	24 (1)	21 (2)	19 (1)	24 (1)
Law, M.	McMaster University	7 (3)	N/A	N/A	N/A	N/A	N/A
Miller, W. C.	University of British Columbia	7 (3)	19 (1)	5 (3)	N/A	19 (1)	5 (3)

$TC_{2016}$ : total citations from Web of Science Core Collection since publication to the end of 2016;  $C_{2016}$ : citations in 2016 only; FP + RP: first author articles + corresponding author articles; R: rank; FP: first author articles; RP: corresponding author articles; N/A: not available.

*Archives of Physical Medicine and Rehabilitation*, *Disability and Rehabilitation*, *AJOT*, *Spinal Cord*, and *Stroke* were the top five refereed journals where high impact articles by Canadian occupational therapy authors were published. It is interesting to note that both American (Gutman et al., 2017) and Canadian occupational therapy authors more frequently published articles in interdisciplinary journals compared to Australian (Brown et al., 2018) and British (Brown, Ho, et al., 2018) occupational therapy authors, who published more frequently in discipline-specific journals. *CJOT*, *AJOT*, *AOTJ*, and *SJOT* were journals with higher publication rates by Australian and British authors compared to Canadian and American occupational therapy authors (Brown et al., 2018; Brown, Ho, et al., 2018; Gutman et al., 2017). Scholars have debated the merits of publishing occupational therapy research in interdisciplinary versus occupational therapy-specific journals. While publication of occupational therapy research in interdisciplinary journals provides greater exposure of the profession's literature to the larger health care community, such publication simultaneously reduces the amount of high quality articles that can enhance the perceived quality and publication metrics of occupational therapy journals (Gutman & Brown, 2018).

High-impact journal articles written by Canadian occupational therapy authors were distributed across 13 WSCC categories in SCI-E and SSCI. The top WSCC subject category for high impact articles with 5 or more citations for the year 2016 was *rehabilitation* with 40%. Other common WSCC subject categories for high impact articles by Canadian occupational therapy authors included *clinical neurology*, *neurosciences*, *sports sciences*, and *pediatrics*. In comparison, the top WSCC subject categories for (a) American occupational therapy authors were *rehabilitation*, *sport sciences*, *clinical neurology*, *neurosciences*, and *developmental psychology* (Gutman et al., 2017); (b) for British

occupational therapy authors, the top WSCC subject categories were *rehabilitation, health care sciences and services, psychiatry*, and *general and internal medicine* (Brown, Ho, et al., 2018); and (c) for Australian authors, *rehabilitation, health care sciences and service; public, environmental and occupational health*; and *clinical neurology* (Brown et al., 2018). These findings likely reflect differences between national health care systems and reimbursable occupational therapy services across countries.

It is interesting to note that the WSCC category of psychiatry was only a top category for British occupational therapy authors, and no highly-cited or high impact articles fell into the categories of applied or clinical psychology. Reasons accounting for this last finding may relate to the journals in which occupational therapy mental health research has been published. In a bibliometric analysis examining the collective body of occupational therapy adult mental health intervention studies from 2000 to 2016, it was found that 68% of studies were published in occupational therapy-specific journals having lower IFs and less open access than their interdisciplinary counterparts (Gutman & Brown, 2018).

McGill University, University of Toronto, University of British Columbia, University of Western Ontario, and University of Montreal were the top five ranking institutions that published the largest percentage of high-impact articles (e.g.,  $C_{2016} \geq 5$ ) by Canadian occupational therapy authors. The top Canadian occupational therapy authors of high impact journal articles were H.J. Polatajko, University of Toronto; B. Beagan, Dalhousie University; I. Gelinas, McGill University; D.L. Rudman, University of Western Ontario; and K.W. Hammell, University of British Columbia. Both the top ranking institutions and individual authors of high-impact occupational therapy journal articles in Canada are all from or linked with the U15 Group of Canadian Research Universities (U15). U15 is a group of 15 affiliated research intensive universities that carry out 80% of all competitive university research, and generate more than 75% of all doctorates yearly conferred in Canada (U15 Group of Canadian Research Universities, 2018). The universities in which these Canadian occupational therapy authors work hold an ethos that encourages and expects faculty to be engaged in knowledge generation and dissemination (Falzarano, 2011). Canadian occupational therapy faculty members employed at U15 institutions are required to be research active to maintain their academic positions, and meet promotion and tenure criteria (Ornstein, Stewart, & Drakich, 2007).

### **Highly cited journal articles**

It was found that 34 articles were cited more than 50 times in another journal article indexed in WSCC during 1992–2016 and categorized as

'highly cited' articles. This trend would be expected, as highly cited articles are commonly ones that have accrued citations over a period of years. That the majority of highly cited articles were published between 2000 and 2009 may reflect the profession's advancement in research skill level at this time. Three of the articles with a  $TC_{2016} > 50$  were published in *AJOT* and another three in *CJOT*. Ten of the highly-cited articles were published in a pediatric oriented journal while another seven focused on adult physical rehabilitation. Two of the journals focused on the area of older adults, while three dealt with the subject area of rehabilitation research. The top WSCC subject category for articles with a  $TC_{2016} > 50$  was *rehabilitation* (37%). Other frequent subject categories for highly-cited journal articles were *sport sciences* (22%), *clinical neurology* (18%), *neurosciences* (13%), and *pediatrics* (11%). Similar results were obtained for Australian and British occupational therapy authors (Brown et al., 2018; Brown, Ho, et al., 2018). Again, these findings reflect both a trend of publication in interdisciplinary journals, and a lack of highly cited and high impact research addressing mental health practice.

*Archives of Physical Medicine and Rehabilitation* (13%), *AJOT* (3.9%), *Physical Therapy* (3.9%), and *Journal of Pediatrics* (3.9%) were the four most frequent journals in which highly cited articles by Canadian occupational therapy authors were published. *Archives of Physical Medicine and Rehabilitation* and *AJOT* were also common journals in which American occupational therapy authors published their work (Gutman et al., 2018). In contrast, Australian and British occupational therapy authors were less likely to publish their work in any of these journals (Brown et al., 2018; Brown, Ho, et al., 2018). One potential reason why Australian and British authors opted less often to submit their work to the *AOTJ* and *BJOT* is that these two journals have both been accepted onto the Clarivate Analytics' SCI-E and SSCI databases of the WSCC that calculates journal IFs and as such occupational therapy authors in those two countries may be opting to publish in their own national professional journals. In addition, no doubt similar to Canadian university-based authors, Australian and British occupational therapy authors who work in university environments have key performance indicators placed on them whereby they are expected to publish in journals with high IFs (Dinis-Oliveira & Magalhães, 2016; Grimes, Bauch, & Ioannidis, 2018).

McGill University (57%), University of Toronto (22%), University of Western Ontario (12%), Jewish Rehabilitation Hospital, Quebec (11%), and Dalhousie University (9.2%) were the top ranking institutions from which the highest percentage of highly-cited articles by Canadian occupational therapists originated. It is interesting to note that four of the top five institutions were sources of highly-cited occupational therapy journal articles by

Canadian authors who were members of the U15 university group, while one was a hospital (U15 Group of Canadian Research Universities, 2018). The Jewish Rehabilitation Hospital located in Laval, Quebec has affiliations with McGill University, Université de Montréal, and Université Laval. The fact that the Jewish Rehabilitation Hospital is a teaching affiliated health care institution, may account for its generation of a highly-cited occupational therapy journal article.

Four of the top Canadian occupational therapy authors who produced high-impact articles also generated highly-cited articles: D.L. Rudman, University of Western Ontario ( $n=21$ ); K.W. Hammell, University of British Columbia ( $n=21$ ); B. Beagan, Dalhousie University ( $n=21$ ); and I. Gelinas, McGill University ( $n=21$ ). A. Colantonio of the University of Toronto ( $n=49$ ) was the top producing Canadian occupational therapy author of highly cited articles. As noted previously, these Canadian authors were affiliated with a U15 designated university (U15 Group of Canadian Research Universities, 2018) in which promotion and tenure are dependent on an established research track record of quality peer-reviewed journal articles and successful competitive grant funding (Acker, Webber, & Smyth, 2012; Dow-Royer, 2010).

### **Limitations**

Data for the bibliometric analysis of high-impact journal articles by Canadian occupational therapy authors were obtained only from the SCI-E and SSCI online databases of WSCC. Based on JCR 2016, 8879 journals in 177 WSCC categories in SCI-E and 3241 journals in 57 WSCC categories in SSCI were indexed. According to *Ulrich's Global Series Directory* (ProQuest, 2016), there are approximately 73,130 active, academic English-language journals in publication as of December 2013, so WSCC indexes about 15% of existing journals (Carpenter, Cone, & Sarli, 2014, p. 1164). Therefore, articles published in journals not indexed in WSCC were not included in the current bibliometric analysis. As a result, it is possible that some notable occupational therapy journal articles by Canadian authors published in occupational therapy-specific journals that are not currently listed in SCI-E or SSCI (e.g., *OTHC*, *OTMH*, *POTG*, *New Zealand Journal of Occupational Therapy*, *OJOT*, *Journal of Occupational Therapy, Schools & Early Intervention*, *South African Journal of Occupational*, *IJOT*, *AIOT*) were not included in this analysis. Likewise, if Canadian occupational therapy authors published articles in interdisciplinary refereed journals not listed in SCI-E or SSCI, these would have been omitted from the analyses is an acknowledged limitation.

The second limitation of the current study relates to the temporal span of the journal articles included in this bibliometric analysis. Occupational therapy articles by Canadian authors published before 1992 and after 2016 were not included in the current bibliometric examination. For journal articles published before the mid-1990s, there may be a chance that an electronic version of the article was not available and therefore may have been missed in the database search. A third recognized limitation is the fact that only the WSCC document type labeled ‘article’ was considered. Other document categories (e.g., conference abstracts, book reviews, letters to the editor, editorials, position statements) were excluded since they were viewed as not reporting sufficient detail of empirical studies and/or were not necessarily peer-reviewed.

The fourth limitation is that the majority of the occupational therapy journals that are currently indexed in JCR WSCC were only accepted into that database from 2009 to 2013. *AJOT* and *OTJR* were the first two occupational therapy journals to attain a reported IF and they were accepted slightly earlier into JCR WSCC. *CJOT* was first accepted into the JCR database in 2009 and received its first IF in 2011 (Brown et al., 2017). Therefore, the majority of the occupational therapy literature published in occupational therapy-specific journals published from 1992 to 2008 may have been missed as part of this analysis. The final limitation of the analysis was that only the words “occupational therapy” and “occupational therapist(s)” were used as key search terms for the journal article publications in SCI-E and SSCI. If Canadian occupational therapy authors did not indicate that they were an occupational therapist or did not list an occupational therapy affiliation in their journal article details, it is possible that their articles may have been missed by the search strategy.

### **Future research**

The authors recommend that a bibliometric analysis specific to occupational therapy practice areas (e.g., neurology, pediatrics, mental health, geriatrics, rehabilitation) be completed so that high impact Canadian authors, universities/institutions, and journals in these areas can be determined. This will provide unique bibliometric insights about niche areas of occupational therapy practice and the authors who actively publish in those clinical specialties. The authors also suggest that the bibliometric methodology be replicated in other countries to discern the most research productive institutions and authors with high impact in occupational therapy. This would provide valuable data for international and cross-institutional bench marking exercises.



## Conclusion

The body of high impact, occupational therapy-related peer-reviewed literature written by Canadian authors has grown over the last two decades. As of 2016, there were 34 journal articles that had greater than 50 citations each and there were 18 articles that had received 10 or more citations during 2016 alone. The top five journals that are listed in JCR WSCC in which Canadian occupational therapy authors published high-impact articles were *Archives of Physical Medicine and Rehabilitation*, *Disability and Rehabilitation*, *American Journal of Occupational Therapy*, *Spinal Cord*, and *Stroke*. The top five Canadian occupational therapy authors who published refereed articles with the highest citation rates were H.J. Polatajko, University of Toronto; B. Beagan, Dalhousie University; I. Gelinias, McGill University; D.L. Rudman, University of Western Ontario; and K.W. Hammell, University of British Columbia. Canadian occupational therapy authors have and continue to publish high impact journal articles thus making a noteworthy contribution to the profession's body of empirical knowledge and evidence both nationally and internationally.

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There are no conflicts of interest related to this article.

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## Authors' contributions

*Dr. Ted Brown* designed the study and drafted the manuscript. *Dr. Yuh-Shan Ho* performed the statistical analyses and drafted the manuscript. *Dr. Sharon Gutman* assisted with interpretation of the data findings and drafted the manuscript. All authors approved the final submitted manuscript.

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