Weinerman J, Constantinescu DS, Lizardi JJ, Sudah SY, Vanden Berge DJ, Carvajal Alba J. Characteristics and Trends of the Most Cited Knee Surgery, Sports Traumatology, Arthroscopy Articles. *Orthopedic Reviews*. 2022;14(3). doi:10.52965/001c.37506

General

Characteristics and Trends of the Most Cited Knee Surgery, Sports Traumatology, Arthroscopy Articles

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Keywords: Knee surgery, traumatology, sports traumatology, arthroscopy, KSSTA, Bibliometric Review, Most Cited, Top 50

https://doi.org/10.52965/001c.37506

Orthopedic Reviews

Vol. 14, Issue 3, 2022

Purpose

To compile and analyze the top 50 most frequently cited articles published in the Knee Surgery, Sports Traumatology, Arthroscopy journal.

Methods

Guidelines set by the Preferred Reporting Items for Systematic Reviews were used as the foundation for data collection and analysis. Scopus database was used to acquire the metric analyzed in the study. Once collected, the data was exported to an excel sheet in order to be organized, sorted, and analyzed in accordance with the metrics of interest.

Results

The United States was the most contributory nation with 14 publications, followed by Sweden with13 publications and Germany with eight publications. The most contributory institution was Umeå University in Vasterbottens, Sweden (8) followed by National Institute for Working Life in Stockholm, Sweden (7) and The University of Pittsburgh (5). Most publications were either Level II (19) or Level III (19) in terms of Level of Evidence. There was only one publication that was classified as a Level I paper.

Conclusion

The Journal of Knee Surgery, Sports Traumatology, and Arthroscopy has published very influential research papers as noted by the number of citations amassed by its most popular articles. KSSTA's top cited publications hail largely from major European and United States institutions and are composed of high-quality reports of mostly Level 2 and Level 3 evidence classifications.

Level of Evidence

3

INTRODUCTION

One may argue that research literature is one of the most important aspects of modern medicine. It provides the foundation for clinical decision making and the advent of new and more effective procedures and interventions. It also serves as a timeline of sorts that depicts how medicine has been conducted in the past and how it has evolved to reach the state it is now currently in. Given its importance, it is no mystery then, why medical education and research is growing at such an incredible pace. In fact, the doubling time of medical knowledge is projected to be 0.2 years, or 73 days. For comparison it was approximately 50 years in 1950.[1] This unprecedented growth in medical knowledge

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and subsequent research has created an avenue for surgical specialties to further specialize into specific niches.

The increasing number of subspecialties and hyper-specialization in medicine has led to more diverse and expansive publication of research within orthopaedic subspecialties. As more research is being published in specific subsets, there has been an increased need to categorize publications accordingly. This pressure has, in part, led to the development of journals such as Knee Surgery, Sports Traumatology, Arthroscopy (KSSTA). The creation of this journal allows for researchers and clinicians alike to better sift through the tremendous amount of literature available to them. The organization provided by journals makes clinical decision making and the development of novel research a more effective process.

KSSTA is a highly reputable journal, being included in the top 10 orthopaedic journals in terms of impact factor (IF). To be specific, the Journal Citation Report reported KSSTA as having the seventh highest IF of orthopaedic journals in 2016.[2] The most recent data from the Clarivate's Journal Citation Report (JCR) provides evidence that KSSTA continues to demonstrate its preeminence. For example, as of 2020 KSSTA has the seventh highest number of total citations (n= 21,052, Table 4) and has the 13th highest JIF (n= 4.342, Table 6). Given that the journal publishes research pertaining to a specific subset of orthopaedic science, a bibliometric review of the journal may yield a better understanding of this orthopaedic subspecialty. By doing so, clinicians and researchers may be able to appreciate the history of Knee Surgery, Sports Traumatology, and Arthroscopy and better gauge any trends present in the current literature to set the foundation for any future research.

Therefore, the purpose of this study is to analyze the metrics of the publications found in KSSTA. To do this a bibliometric review will be conducted using the Scopus database. Trends will be deduced by analyzing the most heavily and frequently cited articles found in KSSTA. These articles will then be stratified using several metrics to elucidate the publication characteristics and trends of KSSTA.

METHODS

The Preferred Reporting Items for Systematic Reviews, or PRISMA for short, has a subset of guidelines for how to conduct a systematic review. Of note, this study is not technically classified as a systematic review, because the objective is not to analyze the content in order to answer a clinical question. Rather this study seeks to illustrate the characteristics and trends found in the most influential papers, by number of citations, in KSSTA. In doing so, we will create a baseline of the kinds of publications that may yield increased influence and may guide future researchers and clinicians.

The first step drawn out by the PRISMA guidelines that was applied to this study was to define our study as a bibliometric review. Then the authors agreed upon the rationale for putting together this study and the objective of said study. This again being in order to interpret the characteristics and trends found in the most cited publications in KSSTA. Data was then collected, filtered accordingly, organized, and analyzed via several steps highlighted below.

Scopus, a database of publications and citation metrics, was used to compile the data analyzed in this study. A search for "Knee Surgery, Sports Traumatology, Arthroscopy" with a "source title" filter was undergone in September of 2021. This initial search inquiry ensured that every eligible publication from KSSTA was extracted. The original search returned 7,624 publications. Two additional filters were added to the search criteria. Firstly, we limited the article types to "articles" and "reviews" only. Then, the results were further filtered to yield only results which were in the "final" publication stage. The outcome yielded a total of 6,697 results. The results were then sorted by total number of citations, from highest to lowest, and the top 100 results were exported to an excel worksheet for further analysis.

The abstracts of the top 50 results were then examined to determine the Level of Evidence according to Oxford's guideline and categorization of articles. The guidelines for Level of Evidence were as follows:

1 = Systematic reviews of randomized trials, or systematic reviews of inception cohort studies.

2 = Systematic reviews of cohort studies, inception cohort studies, cross-sectional studies, randomized trials, or observational studies with dramatic effect.

3 = Cohort studies (primarily retrospective), epidemiological/observational study

4 = Case-control studies, low impact cohort studies, animal trials

5 = Simulations, models, or mechanism-based reasoning

The categories used to stratify the publications in this study were: Clinical outcomes, surgical techniques, Anatomy & Physiology, Technical Note, Clinical Guidelines, Etiology, Imaging, and Classification. The assigning of LOE and category of article was conducted by two independent reviewers (JL and JW).

Using the analysis tools included in the Scopus database, additional data was obtained from the top 50 list including: country of origin, publications by year, contributing authors, and contributing institutions. To mitigate inflation in citation quantity for older articles, the results were also sorted by number of citations per year since their publication.

RESULTS

The author with the most contributions in the Top 50 publications was Alfredson (n=8). There were four authors who contributed four publications (Fu, Kon, Werner, & Öhberg) (*Table 3*). The most prolific decade was the period between 2000-2009 (*Figure 1*), which produced 28 publications (56%). The 1990s were the least prolific period with only 10 publications, though it should be noted that KSSTA was founded in 1993, thus these numbers may be skewed. Four of the five most contributing institutions (*Figure 2*) were based out of Europe. However, the United States was the most contributory nation with 14 publications (19%), with Sweden being the second highest with 13 publications

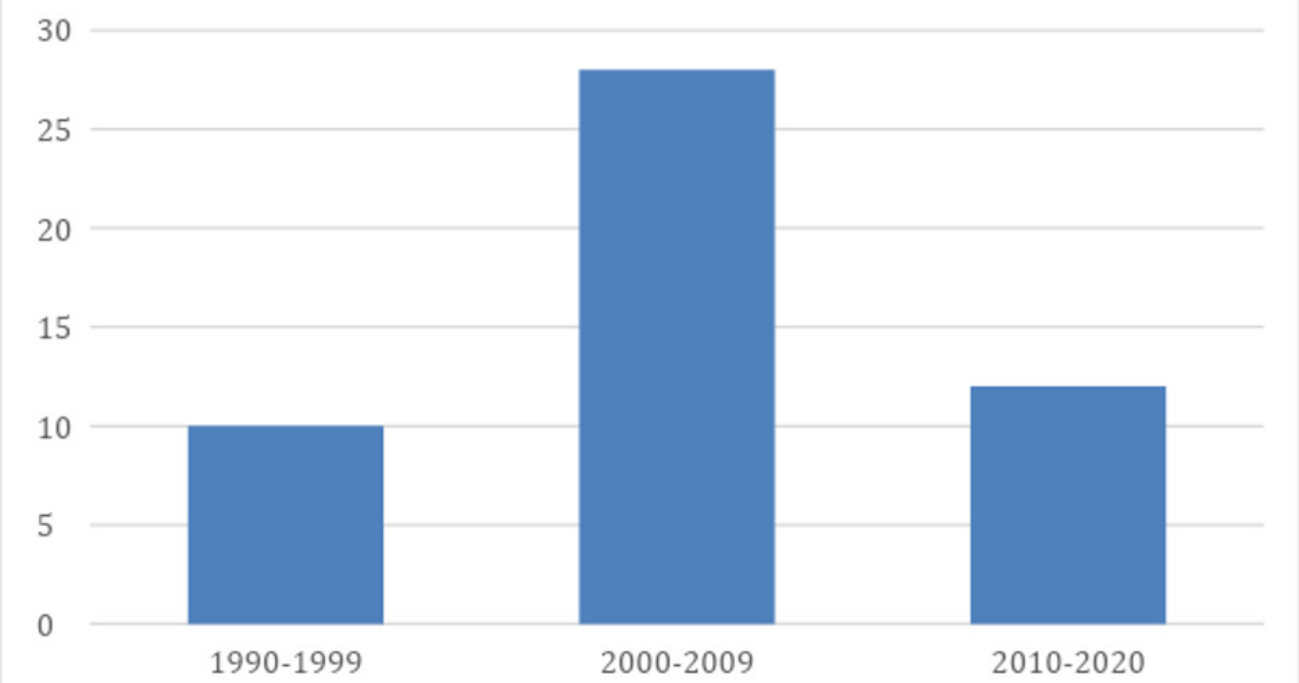

Figure 1. Publications by Decade

KSSTA was founded in 1993, published most of its cited evidence from 2000-2009 and continues to publish highly cited works today.

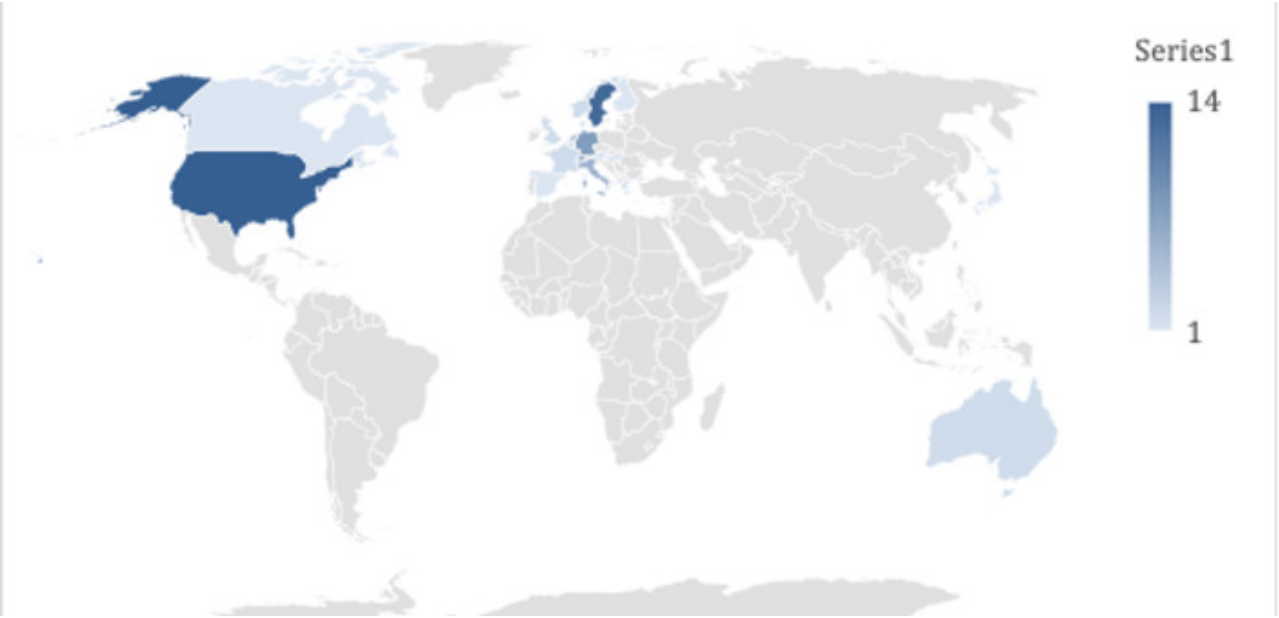

Figure 2. Publications by Country of Origin

KSSTA's most cited publications come from the United States, as well as northern and Western Europe. Additional contributors include Canada, Australia, and Japan.

(18%) and Germany the third highest with eight publications (11%) (*Figure 3*). The most contributory institution was Umeå University in Vasterbottens, Sweden. The University of Pittsburgh was the only institution in the top five most contributory institutions that is based in the United States (*Table 2*).

The 50 publications analyzed for this study were cited a total of 14,178 times (including self-citations). The average number of citations for the top 50 articles was 283.6 citations per publication. The most cited article amassed 1,092 citations while the least cited article was cited 212 times. The most recently published article in the top 50 was published in 2015 and the oldest publication analyzed was published in 1993 (*Table 1*).

Of the 50 articles analyzed, most publications were either Level II (n=19, 38%) or Level III (n=19, 38%) in terms of Level of Evidence. There was only one publication that was classified as a Level I paper. There were three publi-

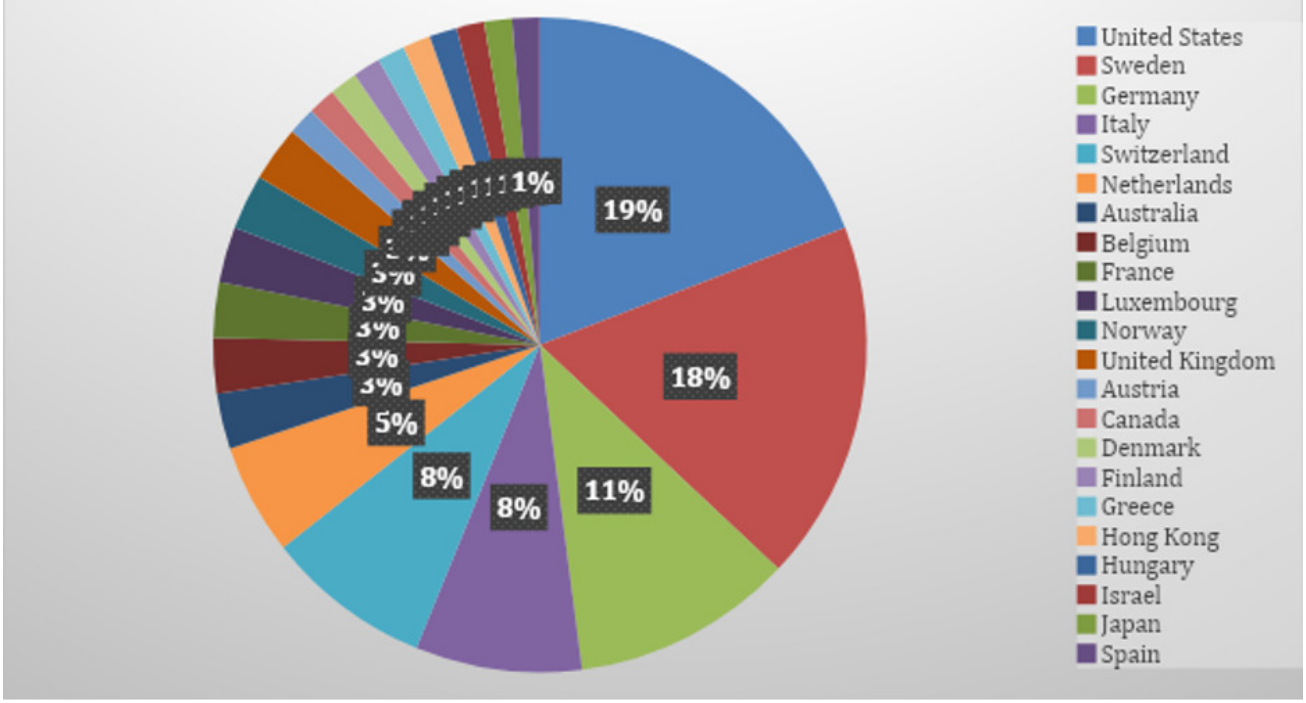

Figure 3. Publications by Country of Origin

cations that did not have Level of Evidence assigned. In terms of categorization of the publications, the most common article category was Clinical Outcomes (n=22). Surgical Technique and Anatomy/Biomechanics were the second most common categories with 13 publications each.

The three most cited articles in this study were published in the 1990s (*Table 1*). The most cited article was "Factors of patellar instability: An anatomic radiographic study," (1994) by Dejour et al. The study sought to quantify factors of patellar instability to better select effective therapeutic plans. "Evaluation of knee ligament injuries with the IKDC form," (1993) by Hefti et al., was the second most cited article in the top 50. The authors of this study sought to standardize how injuries of knee ligaments are quantified using protocols set in place by the International Knee Documentation Committee (IKDC). Furthermore, the 1996 article by Caraffa et al., titled "Prevention of anterior cruciate ligament injuries in soccer: A prospective controlled study of proprioceptive training," was the third most cited article in this study. This study provided evidence that proprioceptive training was effective in reducing the incidence of ACL injuries in soccer players.

In terms of ranking the articles in the top 50 based on the number of citations accrued per year since their publication, the two articles reported above by Dejour et al and Caraffa et al, were both in the top three. However, the 2009 article by Hefti et al., "Prevention of non-contact anterior cruciate ligament injuries in soccer players," was the second ranked article with 39.8 citations per year. Six of the top 10 articles ranked in order of citation per year were published in the period between 2010 and 2020 (*Table 2*).

DISCUSSION

Though a relatively young journal, Knee Surgery, Sports Traumatology, Arthroscopy (KSSTA), has quickly climbed toward the top of orthopaedic journals. In fact, it is the second newest journal in the top 10 orthopaedic journals in terms of the 2015 JIF.[2] Evidence of the journal's quick and enduring ascent is further demonstrated by its status amongst the most heavily cited orthopaedic journals. As mentioned before, Clarivate's 2020 JCR includes KSSTA as the seventh highest ranking orthopaedic journal in terms of total citations (n= 21,052), which is a testament to the journal's influence in and of itself. This influence is only further boasted by the fact that KSSTA was established in 1993 and is therefore tied with being the newest journal in the top 10 orthopaedic journals, in terms of total citations (Table 5). In a 2021 publication, a group of authors evaluated the increase in quantity and quality of research found in KSSTA.[53] They found that there has been a significant increase in the quantity of papers published and categorically more substantial article topics. Our study elucidated a similar finding. When the top 50 list was ranked in terms of citations per year, six out of the top 10 articles were published after 2010. Of note, both the oldest paper (1993) and newest paper (2015) were ranked in the top 10 when sorted by number of citations per year. This may serve as an attractor to active researchers looking for a sustainable, but evolving audience. The dynamics of KSSTA's growth should not serve as a deterrent but and encouraging factor for those looking to publish literature that has the potential to reach a very broad audience in the near future, but also sustain a long-lasting impact.

The geographic distribution of the most contributory institutions and countries reflected a more international

Table 1. Top 50 Most Cited Publications in KSSTA

Rank	Publication	Total Citations	Citations/ Year of Publication Until 2021
1	Dejour, H., et al. (1994). "Factors of patellar instability: an anatomic radiographic study." Knee Surg Sports Traumatol Arthrosc **2**(1): 19-26.[3]	1092	40.44
2	Hefti, F., et al. (1993). "Evaluation of knee ligament injuries with the IKDC form." Knee Surg Sports Traumatol Arthrosc **1**(3-4): 226-234.[4]	1081	38.61
3	Caraffa, A., et al. (1996). "Prevention of anterior cruciate ligament injuries in soccer. A prospective controlled study of proprioceptive training." Knee Surg Sports Traumatol Arthrosc **4**(1): 19-21.[5]	547	21.88
4	Alentorn-Geli, E., et al. (2009). "Prevention of non-contact anterior cruciate ligament injuries in soccer players. Part 1: Mechanisms of injury and underlying risk factors." Knee Surg Sports Traumatol Arthrosc **17**(7): 705-729.[6]	477	39.75
5	Hangody, L., et al. (1997). "Arthroscopic autogenous osteochondral mosaicplasty for the treatment of femoral condylar articular defects. A preliminary report." Knee Surg Sports Traumatol Arthrosc **5**(4): 262-267.[7]	407	16.96
6	Kvist, J., et al. (2005). "Fear of re-injury: a hindrance for returning to sports after anterior cruciate ligament reconstruction." Knee Surg Sports Traumatol Arthrosc **13**(5): 393-397.[8]	372	23.25
7	Zengerink, M., et al. (2010). "Treatment of osteochondral lesions of the talus: a systematic review." Knee Surg Sports Traumatol Arthrosc **18**(2): 238-246.[9]	371	33.73
8	Bobic, V. (1996). "Arthroscopic osteochondral autograft transplantation in anterior cruciate ligament reconstruction: a preliminary clinical study." Knee Surg Sports Traumatol Arthrosc **3**(4): 262-264.[10]	371	14.84
9	Lobenhoffer, P. and J. D. Agneskirchner (2003). "Improvements in surgical technique of valgus high tibial osteotomy." Knee Surg Sports Traumatol Arthrosc **11**(3): 132-138.[11]	370	20.56
10	Kon, E., et al. (2010). "Platelet-rich plasma: intra-articular knee injections produced favorable results on degenerative cartilage lesions." Knee Surg Sports Traumatol Arthrosc **18**(4): 472-479.[12]	362	32.91
11	Ohberg, L., et al. (2001). "Neovascularisation in Achilles tendons with painful tendinosis but not in normal tendons: an ultrasonographic investigation." Knee Surg Sports Traumatol Arthrosc **9**(4): 233-238.[13]	355	17.75
12	L'Insalata, J. C., et al. (1997). "Tunnel expansion following anterior cruciate ligament reconstruction: a comparison of hamstring and patellar tendon autografts." Knee Surg Sports Traumatol Arthrosc **5**(4): 234-238.[14]	352	14.67
13	Philippon, M., et al. (2007). "Femoroacetabular impingement in 45 professional athletes: associated pathologies and return to sport following arthroscopic decompression." Knee Surg Sports Traumatol Arthrosc **15**(7): 908-914.[15]	342	24.43
14	Madry, H., et al. (2010). "The basic science of the subchondral bone." Knee Surg Sports Traumatol Arthrosc **18**(4): 419-433.[16]	330	30.00
15	Mafi, N., et al. (2001). "Superior short-term results with eccentric calf muscle training compared to concentric training in a randomized prospective multicenter study on patients with chronic Achilles tendinosis." Knee Surg Sports Traumatol Arthrosc **9**(1): 42-47.[17]	319	15.95
16	Clatworthy, M. G., et al. (1999). "Tunnel widening in anterior cruciate ligament reconstruction: a prospective evaluation of hamstring and patella tendon grafts." Knee Surg Sports Traumatol Arthrosc **7**(3): 138-145.[18]	318	14.45
17	Hoher, J., et al. (1998). "Bone tunnel enlargement after anterior cruciate ligament reconstruction: fact or fiction?" Knee Surg Sports Traumatol Arthrosc **6**(4): 231-240.[19]	305	13.26
18	Amis, A. A. and R. P. Jakob (1998). "Anterior cruciate ligament graft positioning, tensioning and twisting." Knee Surg Sports Traumatol Arthrosc **6 Suppl 1**:	293	12.74

Rank	Publication	Total Citations	Citations/ Year of Publication Until 2021
	S2-12.[20]		
19	Rudolph, K. S., et al. (2001). "Dynamic stability in the anterior cruciate ligament deficient knee." Knee Surg Sports Traumatol Arthrosc **9**(2): 62-71.[21]	292	14.60
20	Verdonk, P. C., et al. (2006). "Meniscal allograft transplantation: long-term clinical results with radiological and magnetic resonance imaging correlations." Knee Surg Sports Traumatol Arthrosc **14**(8): 694-706.[22]	288	19.20
21	Alfredson, H., et al. (2003). "Is vasculo-neural ingrowth the cause of pain in chronic Achilles tendinosis? An investigation using ultrasonography and colour Doppler, immunohistochemistry, and diagnostic injections." Knee Surg Sports Traumatol Arthrosc **11**(5): 334-338.[23]	286	15.89
22	Vincent, J. P., et al. (2012). "The anterolateral ligament of the human knee: an anatomic and histologic study." Knee Surg Sports Traumatol Arthrosc **20**(1): 147-152.[24]	284	31.56
23	Basad, E., et al. (2010). "Matrix-induced autologous chondrocyte implantation versus microfracture in the treatment of cartilage defects of the knee: a 2-year randomised study." Knee Surg Sports Traumatol Arthrosc **18**(4): 519-527.[25]	284	25.82
24	Soderman, K., et al. (2000). "Balance board training: prevention of traumatic injuries of the lower extremities in female soccer players? A prospective randomized intervention study." Knee Surg Sports Traumatol Arthrosc **8**(6): 356-363.[26]	281	13.38
25	Schottle, P. B., et al. (2005). "Clinical and radiological outcome of medial patellofemoral ligament reconstruction with a semitendinosus autograft for patella instability." Knee Surg Sports Traumatol Arthrosc **13**(7): 516-521.[27]	261	16.31
26	Kessler, M. A., et al. (2008). "Function, osteoarthritis and activity after ACL-rupture: 11 years follow-up results of conservative versus reconstructive treatment." Knee Surg Sports Traumatol Arthrosc **16**(5): 442-448.[28]	260	20.00
27	Duthon, V. B., et al. (2006). "Anatomy of the anterior cruciate ligament." Knee Surg Sports Traumatol Arthrosc **14**(3): 204-213.[29]	260	17.33
28	Gobbi, A., et al. (2005). "Treatment of full thickness chondral lesions of the knee with microfracture in a group of athletes." Knee Surg Sports Traumatol Arthrosc **13**(3): 213-221.[30]	259	16.19
29	Filardo, G., et al. (2011). "Platelet-rich plasma intra-articular knee injections for the treatment of degenerative cartilage lesions and osteoarthritis." Knee Surg Sports Traumatol Arthrosc **19**(4): 528-535.[31]	256	25.60
30	Fahlstrom, M., et al. (2003). "Chronic Achilles tendon pain treated with eccentric calf-muscle training." Knee Surg Sports Traumatol Arthrosc **11**(5): 327-333.[32]	255	14.17
31	Jarvela, T. (2007). "Double-bundle versus single-bundle anterior cruciate ligament reconstruction: a prospective, randomize clinical study." Knee Surg Sports Traumatol Arthrosc **15**(5): 500-507.[33]	254	18.14
32	Gustavsson, A., et al. (2006). "A test battery for evaluating hop performance in patients with an ACL injury and patients who have undergone ACL reconstruction." Knee Surg Sports Traumatol Arthrosc **14**(8): 778-788.[34]	253	16.87
33	Soderman, K., et al. (2001). "Risk factors for leg injuries in female soccer players: a prospective investigation during one out-door season." Knee Surg Sports Traumatol Arthrosc **9**(5): 313-321.[35]	253	12.65
34	Thomee, R., et al. (2011). "Muscle strength and hop performance criteria prior to return to sports after ACL reconstruction." Knee Surg Sports Traumatol Arthrosc **19**(11): 1798-1805.[36]	241	24.10
35	Irrgang, J. J., et al. (1998). "Use of the International Knee Documentation Committee guidelines to assess outcome following anterior cruciate ligament reconstruction." Knee Surg Sports Traumatol Arthrosc **6**(2): 107-114.[37]	239	10.39

Rank	Publication	Total Citations	Citations/ Year of Publication Until 2021
36	Gomoll, A. H., et al. (2010). "The subchondral bone in articular cartilage repair: current problems in the surgical management." Knee Surg Sports Traumatol Arthrosc **18**(4): 434-447.[38]	237	21.55
37	Philippon, M. J., et al. (2007). "Clinical presentation of femoroacetabular impingement." Knee Surg Sports Traumatol Arthrosc **15**(8): 1041-1047.[39]	235	16.79
38	Filardo, G., et al. (2012). "Platelet-rich plasma intra-articular injections for cartilage degeneration and osteoarthritis: single- versus double-spinning approach." Knee Surg Sports Traumatol Arthrosc **20**(10): 2082-2091.[40]	234	26.00
39	Herrlin, S., et al. (2007). "Arthroscopic or conservative treatment of degenerative medial meniscal tears: a prospective randomised trial." Knee Surg Sports Traumatol Arthrosc **15**(4): 393-401.[41]	233	16.64
40	van Grinsven, S., et al. (2010). "Evidence-based rehabilitation following anterior cruciate ligament reconstruction." Knee Surg Sports Traumatol Arthrosc **18**(8): 1128-1144.[42]	230	20.91
41	Zantop, T., et al. (2006). "Anterior cruciate ligament anatomy and function relating to anatomical reconstruction." Knee Surg Sports Traumatol Arthrosc **14**(10): 982-992.[43]	226	15.07
42	Gille, J., et al. (2010). "Mid-term results of Autologous Matrix-Induced Chondrogenesis for treatment of focal cartilage defects in the knee." Knee Surg Sports Traumatol Arthrosc **18**(11): 1456-1464.[44]	222	20.18
43	Ohberg, L. and H. Alfredson (2004). "Effects on neovascularisation behind the good results with eccentric training in chronic mid-portion Achilles tendinosis?" Knee Surg Sports Traumatol Arthrosc **12**(5): 465-470.[45]	222	13.06
44	Fitzgerald, G. K., et al. (2000). "A decision-making scheme for returning patients to high-level activity with nonoperative treatment after anterior cruciate ligament rupture." Knee Surg Sports Traumatol Arthrosc **8**(2): 76-82.[46]	222	10.57
45	Lind, M., et al. (2009). "The first results from the Danish ACL reconstruction registry: epidemiologic and 2 year follow-up results from 5,818 knee ligament reconstructions." Knee Surg Sports Traumatol Arthrosc **17**(2): 117-124.[47]	220	18.33
46	Rudolph, K. S., et al. (2000). "Dynamic stability after ACL injury: who can hop?" Knee Surg Sports Traumatol Arthrosc **8**(5): 262-269.[48]	215	10.24
47	Alfredson, H. and L. Ohberg (2005). "Sclerosing injections to areas of neo-vascularisation reduce pain in chronic Achilles tendinopathy: a double-blind randomised controlled trial." Knee Surg Sports Traumatol Arthrosc **13**(4): 338-344.[49]	214	13.38
48	Webster, K. E., et al. (2001). "Bone tunnel enlargement following anterior cruciate ligament reconstruction: a randomised comparison of hamstring and patellar tendon grafts with 2-year follow-up." Knee Surg Sports Traumatol Arthrosc **9**(2): 86-91.[50]	214	10.70
49	Nomura, E., et al. (2005). "Anatomical analysis of the medial patellofemoral ligament of the knee, especially the femoral attachment." Knee Surg Sports Traumatol Arthrosc **13**(7): 510-515.[51]	213	13.31
50	Caterine, S., et al. (2015). "A cadaveric study of the anterolateral ligament: re-introducing the lateral capsular ligament." Knee Surg Sports Traumatol Arthrosc **23**(11): 3186-3195.[52]	212	35.33

Table 2. Most cited articles by citations per year

Rank	Publication	Total Citations	Citations per Year	Year Published
1	Dejour, H., et al. (1994). "Factors of patellar instability: an anatomic radiographic study." Knee Surg Sports Traumatol Arthrosc **2**(1): 19-26.	1092	40.44	1994
2	Alentorn-Geli, E., et al. (2009). "Prevention of non-contact anterior cruciate ligament injuries in soccer players. Part 1: Mechanisms of injury and underlying risk factors." Knee Surg Sports Traumatol Arthrosc **17**(7): 705-729.	477	39.75	2009
3	Hefti, F., et al. (1993). "Evaluation of knee ligament injuries with the IKDC form." Knee Surg Sports Traumatol Arthrosc **1**(3-4): 226-234.	1081	38.61	1993
4	Caterine, S., et al. (2015). "A cadaveric study of the anterolateral ligament: re-introducing the lateral capsular ligament." Knee Surg Sports Traumatol Arthrosc **23**(11): 3186-3195.	212	35.33	2015
5	Zengerink, M., et al. (2010). "Treatment of osteochondral lesions of the talus: a systematic review." Knee Surg Sports Traumatol Arthrosc **18**(2): 238-246.	371	33.73	2010
6	Kon, E., et al. (2010). "Platelet-rich plasma: intra-articular knee injections produced favorable results on degenerative cartilage lesions." Knee Surg Sports Traumatol Arthrosc **18**(4): 472-479.	362	32.91	2010
7	Vincent, J. P., et al. (2012). "The anterolateral ligament of the human knee: an anatomic and histologic study." Knee Surg Sports Traumatol Arthrosc **20**(1): 147-152.	284	31.56	2012
8	Madry, H., et al. (2010). "The basic science of the subchondral bone." Knee Surg Sports Traumatol Arthrosc **18**(4): 419-433.	330	30.00	2010
9	Filardo, G., et al. (2012). "Platelet-rich plasma intra-articular injections for cartilage degeneration and osteoarthritis: single- versus double-spinning approach." Knee Surg Sports Traumatol Arthrosc **20**(10): 2082-2091.	234	26.00	2012
10	Basad, E., et al. (2010). "Matrix-induced autologous chondrocyte implantation versus microfracture in the treatment of cartilage defects of the knee: a 2-year randomised study." Knee Surg Sports Traumatol Arthrosc **18**(4): 519-527.	284	25.82	2010

demographic than other similar studies. For example, a bibliometric review of the "100 Most Cited Articles in Orthopaedic Surgery (2010)," found that the vast majority (72%) of publications was led by the United States.[54] Similarly, the 2021 bibliometric review on the journal *Spine,* demonstrated that the United States was the most contributory country in the top 100 articles.[55] This may have been expected, given that KSSTA is a journal based in Europe. In fact, KSSTA is also known as the Official Journal of the European Society of Sports Traumatology, Knee Surgery and Arthroscopy (ESSKA). This vast, international influence the KSSTA holds should be an excellent predictor of its future success as the medicine continues to evolve into a more nebulous, global network with the ease of access provided by the internet, virtual meetings and conferences, and the ease of collaboration from nation to nation. The future of high-impact medical journals looks very similar to the contributory profile of KSSTA. Taking this into account, KSSTA and its researchers should have a positive outlook with respect to growth and should consider collaborations with active institutions in China, Japan, and Korea to further develop globally.

By analyzing the classification of each of the articles in the top 50 most cited works, one may be able to deduce what category is likely to be cited more frequently. Our data suggests that articles pertaining to either Clinical Outcomes, Surgical Technique, or Anatomy/Biomechanics are the categories most likely to be heavily cited. These three classifications made up 75% of all publications assigned by category. Of note, certain publications received more than one category depending on overlapping themes. This should encourage researchers to continue to explore these categories, as it is highly relevant to current practitioners and researchers alike. It is no surprise that clinical outcomes are the most studied, however it should be of note that papers exploring anatomy and biomechanics are also highly relevant and may serve as educational tools for students and trainees, as well as excellent reminders for fellowship trained surgeons revisiting an old technique or expanding their scope of practice.

It is worth noting that the vast majority of papers in our analysis were classified as Level II or Level III evidence, with only one paper meeting the criteria for Level I evidence. This is consistent with many bibliometric reviews of high-impact journals and should serve as a reminder that level of evidence is not the only marker of quality research. This may also serve as a reminder to be critical of evidence presented in high impact journals, and to look for corroborating evidence and analyses before changing practice-patterns. Specifically, with respect to the high prevalence of

Level III publications, these are often more readily replicable by active researchers interested in validating or expanding upon the current literature. Most Level 3 publications do not require a change in practice patterns in order to come to a conclusion or meaningful analysis, which we believe is a cornerstone of process improvement and advancement of care for our orthopedic patients. Additionally, the authors believe it is a strength of the journal that publications with all levels of evidence are read and ultimately cited by contributors.

As with any research, there are inherent limitations to bibliometric reviews. One obvious example lies in search engines that may filter results slightly differently from one another. For example, the authors noticed subtle differences in results returned between SCOPUS, Google Scholar and Web of Science databases that didn't measurably change the results of the study or omit significant publications, but these subtle differences open the possibility for these types of errors. Ultimately the authors used the SCOPUS database in accordance with the precedent from published bibliometric reviews and due to user-friendly ease of replicating the study for external validation.

The Journal of Knee Surgery, Sports Traumatology, and Arthroscopy has published very influential research papers as noted by the number of citations amassed by its most popular articles. KSSTA's top cited publications hail largely from major European and United States institutions and are composed of high-quality reports of mostly Level 2 and Level 3 evidence classifications.

AUTHOR CONTRIBUTIONS

All authors participated in the study and helped shape the research question, data, analysis, and manuscript.

CONFLICTS OF INTEREST AND SOURCE OF FUNDING

The authors, their immediate family, and any research foundation with which they are affiliated did not receive any financial payments or other benefits from any commercial entity related to the subject of this article. There are no relevant disclosures. We have no conflicts of interest. The Manuscript submitted does not contain information about medical device(s)/drug(s). All authors significantly contributed to the document and have reviewed the final manuscript.

Table 3. Contributing Institutions

Name of Institution	Location of Institution	Number of Articles
Umeå University	Vasterbottens, Sweden	8
National Institute for Working Life (Arbetslivsinstitutet)	Stockholm, Sweden	7
University of Pittsburgh	Pittsburgh, Pennsylvania, USA	5
Karolinska Institute	Stockholm, Sweden	4
IRCCS Rizzoli Orthopaedic Institute, Bologna	Bologna, Italy	4

Multiple institutions may be attributed to a single publication. Only institutions with 4 or more contributions are included.

Table 4. Top 10 Orthopaedic Journals by 2020 Total Citations

Journal name	Total Citations
Journal of Bone and Joint Surgery - American Volume	53,701
Spine	53,384
Clinical Orthopaedics and Related Research	44,823
American Journal of Sports Medicine	42,235
Journal of Arthroplasty	27,716
Osteoarthritis and Cartilage	21,755
Knee Surgery Sports Traumatology and Arthroscopy	21,052
European Spine Journal	20,361
The Journal of Arthroscopic and Related Surgery	20,208
Injury - International Journal of The Care of the Injured	19,692

Table 5. Top 10 Orthopaedic Journals by 2020 total citations

Journal name	Year Published
Journal of Bone and Joint Surgery - American Volume	1889
Spine	1976
Clinical Orthopaedics and Related Research	1953
American Journal of Sports Medicine	1976
Journal of Arthroplasty	1979
Osteoarthritis and Cartilage	1993
Knee Surgery Sports Traumatology and Arthroscopy	1993
European Spine Journal	1992
The Journal of Arthroscopic and Related Surgery	1985
Injury - International Journal of The Care of the Injured	1969

Table 6. Top 15 Orthopaedic Journals by 2020 Journal Impact Factor

Journal name	2020 JIF
Journal of Physiotherapy	7
Osteoarthritis and Cartilage	6.576
American Journal of Sports Medicine	6.203
Bone & Joint Research	5.853
Journal of Bone and Joint Surgery - American Volume	5.284
Journal of Orthopaedic Translation	5.191
Bone & Joint Journal	5.082
Arthroscopy - The Journal of Arthroscopic and Related Surgery	4.772
Journal of Arthroplasty	4.757
Journal of Orthopaedic & Sports Physical Therapy	4.751
Cartilage	4.634
EFORT Open Reviews	4.618
Knee Surgery Sports Traumatology and Arthroscopy	4.342
Clinical Orthopaedics and Related Research	4.291
Spine Journal	4.166

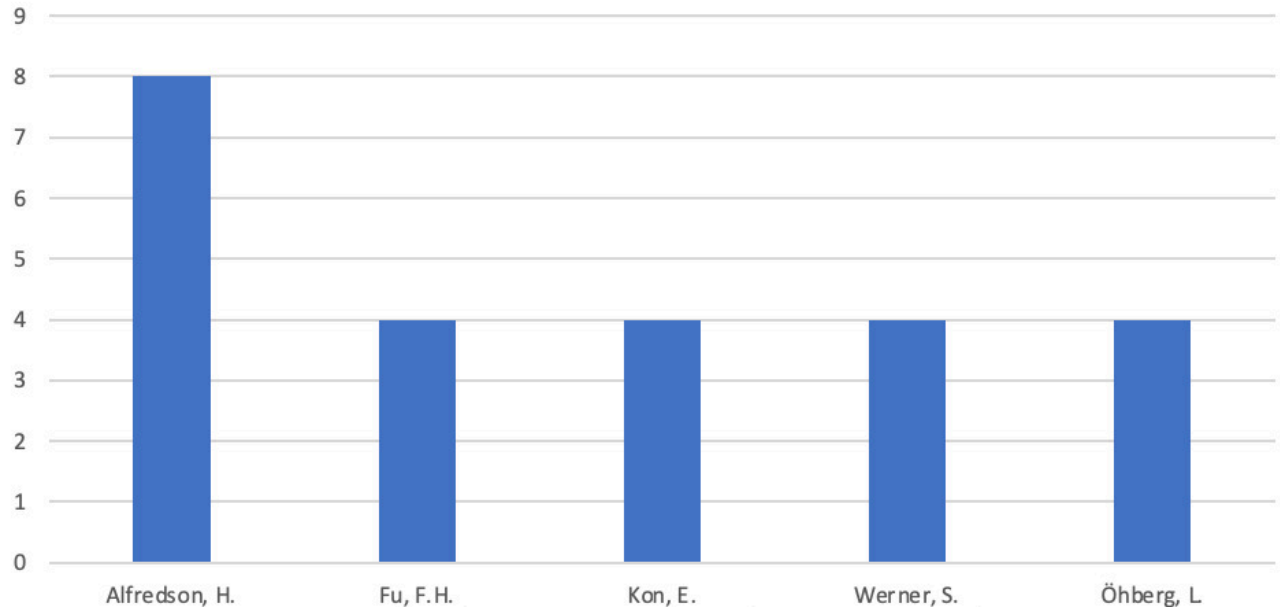

Figure 4. Author Frequency

The top 5 authors all contributed four or more publications each. Alfredson was the most prolific, with eight publications.

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