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## PREFERABLE TYPE OF ABSTRACT IN LEADING SCIENTIFIC JOURNALS

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### ABSTRACT

An abstract is perhaps the most important single paragraph in a manuscript since it is used for reference purposes in different scientific databases. There are three major scientific writing styles (APA Style, Chicago Style, Harvard Style) providing different guidelines for creating an abstract. **Purpose:** The aim of this research was to find out whether there was some dependence between the category of the journals, the country of origin, and the coverage (number of years of publication) and the type of abstracts submitted. **Methods:** We carried out our investigation through synthesis of data retrieved from scimagojr.com and made an analysis based on the top world-famous 50 sports journals with the highest impact factor for 2018. **Results:** There were no statistically significant differences and correlations between the researched parameters (type of abstract and the category of journals:  $\chi^2=1.94$ ;  $\alpha=0.47$ ;  $C=0.17$ ; type of abstract and the country of origin:  $\chi^2=3.16$ ;  $\alpha=0.53$ ;  $C=0.24$ ; type of abstract and coverage:  $\chi^2=1.81$ ;  $\alpha=0.61$ ;  $C=0.19$ ). **Conclusions:** We can assume that there are no obvious criteria for adopting a particular scientific writing style and each journal has their own traditions and favored approach. However, certain differences were outlined.

**Key words:** abstract, scientific sports journal, writing style

### INTRODUCTION

The world of science has become enormously cosmopolitan. Nowadays we have access to the work of authors all around the globe thanks to the rapid development of computer technologies and the wide spread of the Internet. No research is complete until the results are shared with the scientific community. Researchers meet up at international conferences or participate in scientific and educational programs in order to introduce their findings to their colleagues working in the same field of study. This process was speeded up as early as the nineteenth century when scholars began to cross borders – studied in foreign countries, established contacts with their international peers and gathered at scientific forums. All this created the so called “scientific spirit” (1). However, publications in different journals have always been the most prevalent way of sharing research results.

There are two major preconditions for submitting a manuscript in a world-famous edition. The first and foremost is to have a good command of English language and the second – to organize your article in accordance with the requirements of the three leading writing styles: APA Style, Chicago Style, and Harvard Style. Most referenced and indexed magazines and all scientific journals with high impact factor in the world publish articles written in English language. Those which accept texts in other languages require that authors submit their abstracts in English so that they can be included in scientific databases. This turns an abstract into perhaps the most important single paragraph in the whole article. Researchers often judge the quality of an article on the information provided in it and on this basis decide whether to retrieve the whole text or not. An abstract should provide information about a survey which is as exhaustive as possible and should include numerous key words which other researchers use when searching for publications in databases (2). It should contain four or five major points – the aim, design, major findings

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as a result of the analysis made, the conclusions drawn, and the implications of our results (3).

Creating an informative, interesting, concise, and comprehensive abstract requires following the guidelines of a particular writing style (4-6). However, these differ in terms of several parameters including the number of words included in an abstract and the overall outline of an abstract. The length of abstracts varies in different editions but is usually within 150-250 words or 100-300 words. According to APA and Chicago Style abstracts have to be presented as a single paragraph without paragraph indentation. Harvard Style requires that the information in an abstract should be organized under different headings we can find in the main body of an article, e.g. introduction/background, aims, methods, results, conclusions and implications. This introduces certain insecurity in the style researchers are supposed to use when preparing their abstracts for submission in different scientific journals.

## METHODS

The aim of this research was to find out whether there was some dependence between the category of the sport related journals, the country of origin, the coverage (number of years of publication) and the type of abstracts submitted.

We carried out our investigation through synthesis of data retrieved from scimagojr.com (7) and made an analysis based on the top world-famous 50 journals related to sports science with the highest impact factor for 2018. In order to determine what type of abstract each journal favors, we viewed 3-5 abstracts published in each edition from February and March, 2020.

First, the information in the abstracts was examined in terms of content, vocabulary, and grammar, and then some statistical analysis was carried out. The software program used to analyze the data was SPSS 19. In order to statistically process the data, we performed frequency analysis (cross tabulations),  $\chi^2$  criterion of Pearson for finding statistically reliable differences and calculated the contingency coefficients for proving correlations.

## RESULTS

When analyzing the structure of the abstracts viewed, we noticed a number of common characteristics favored by all three writing styles (APA Style, Chicago Style, Harvard Style). None of the abstracts included a detailed description of the literature review or a long presentation of the subject matter discussed in the manuscript. Neither acronyms and abbreviations nor citations of the works of other authors could be found in any of the presented abstracts. There were not any pictures, figures or tables either.

The use of verbs instead of nouns was also something which drew our attention. Sentence structure such as “We investigated the impact of ballistic stretching on training explosive strength” was the preferable choice of statement over passive form clauses such as: “The investigation of the impact of ballistic stretching on training explosive strength was carried out”. We believe it brings more clarity in expression and makes the text more easily readable especially if longer sentences are to be used.

The results in all abstracts were presented in simple past tense and simple present tense was used when drawing conclusions and stating the implications of a particular study.

The abstracts which followed the guidelines of APA Style and Chicago Style were organized in a single paragraph which had a similar structure.

- The issue which will be investigated in the scientific article was presented in 1-2 sentences. The authors explained what their research was aimed at and what their motivation was to conduct the survey. They stated the major research questions and the hypothesis made prior to carrying out the investigations.
- Detailed characteristics of the subjects of the research (number of researched individuals, age, gender, pertinent characteristics) – in 1 sentence usually.
- Research methods (mentioning only the major or the most interesting ones) in 1-2 sentences. Here, the authors provided details about the type of research they did – whether they conducted a laboratory experiment or an experiment in natural environment, whether they carried out a theoretical investigation or performed a pedagogical or empirical study. They also mentioned the type of equipment or the

kinds of questionnaires used when doing their research.

- Obtained results from the survey and their statistical significance in 4-5 sentences. The abstracts included only the main results obtained from the studies, including those that ran counter to expectations.
- Conclusions and practical implications of the results in 1-2 sentences. The authors drew inferences about what was new and innovative about their surveys and how their findings could be implemented in a particular scientific field.

The abstracts written according to Harvard Style had different headings which were organized as follows:

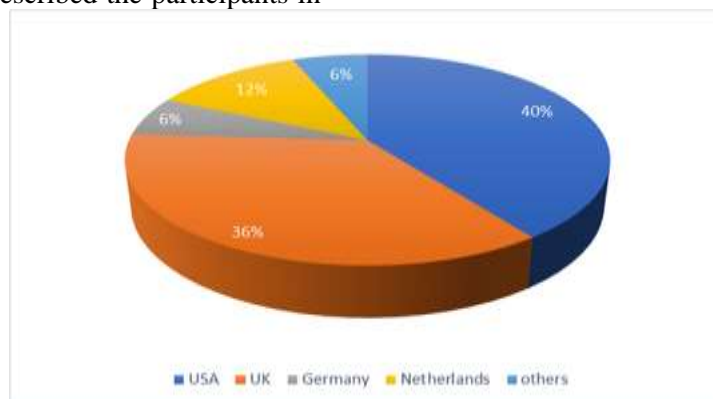
- General and Specific Background / Introduction – 1-2 sentences. The authors presented the scientific field they worked in and the common knowledge related to the research issue. The first sentence provided more general information while the second one narrowed the focus of the research.
- Knowledge Gap / Aims (Objective) – 1 sentence. The authors mentioned the inconsistency of recent findings and the tasks they had set in order to solve these inconsistencies or widen the scope of knowledge in a particular area.
- Methods / Design – 1-2 sentences. The authors presented the design of their research. They described the participants in

the experiment, the duration of the experiment, and the statistical methods used to analyze the obtained data.

- Experimental Approach & Results / Results – 2-3 sentences. The authors mentioned the research method adopted in their surveys including the major research methods applied and the most important results from the experiment with their statistical significance levels.
- Conclusions / Implications – 1-2 sentences. The authors drew conclusions about the results they had obtained. They explained how their findings could enrich the scientific sphere they worked in.

The second stage in our research aimed at determining whether the required type of abstract depended on the country a journal was published in, on the category of a journal, and on the coverage of a journal.

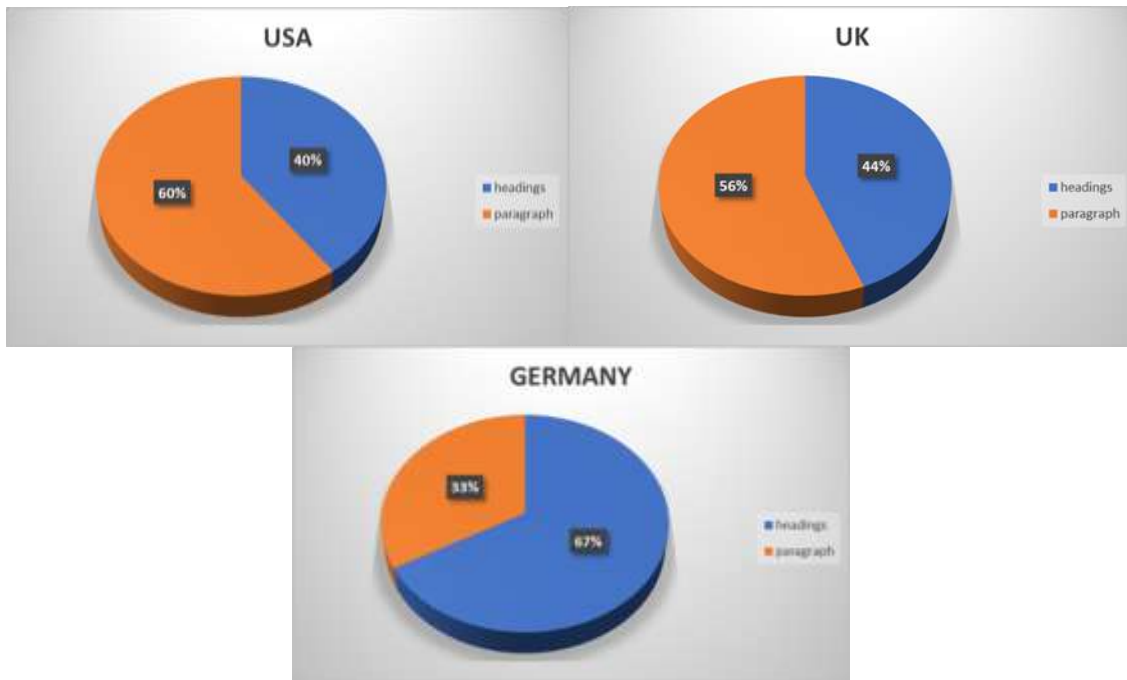
**Figure 1** presents the distribution of the scientific editions according to the country of origin. The 50 journals we compared are published mainly in the USA (20 journals) and the UK (18 journals). Netherlands follows with over one tenth of the top 50 world-famous scientific editions (6 journals) and Germany is aligned on the fourth place (3 journals) together with Canada, Turkey and Poland (1 journal each).



**Figure 1.** Countries publishing top 50 journals with impact factor

The data analysis shows that in both the USA and UK the preferable type of abstract was organized as a single paragraph (**Figure 2**), while the reverse trend can be observed in Germany where the submitted abstracts according to Harvard Style were prevailing. In the Netherlands the numbers were equal, whereas in all the other countries (Canada, Turkey and Poland) the journals followed APA Style and Chicago Style. The frequency

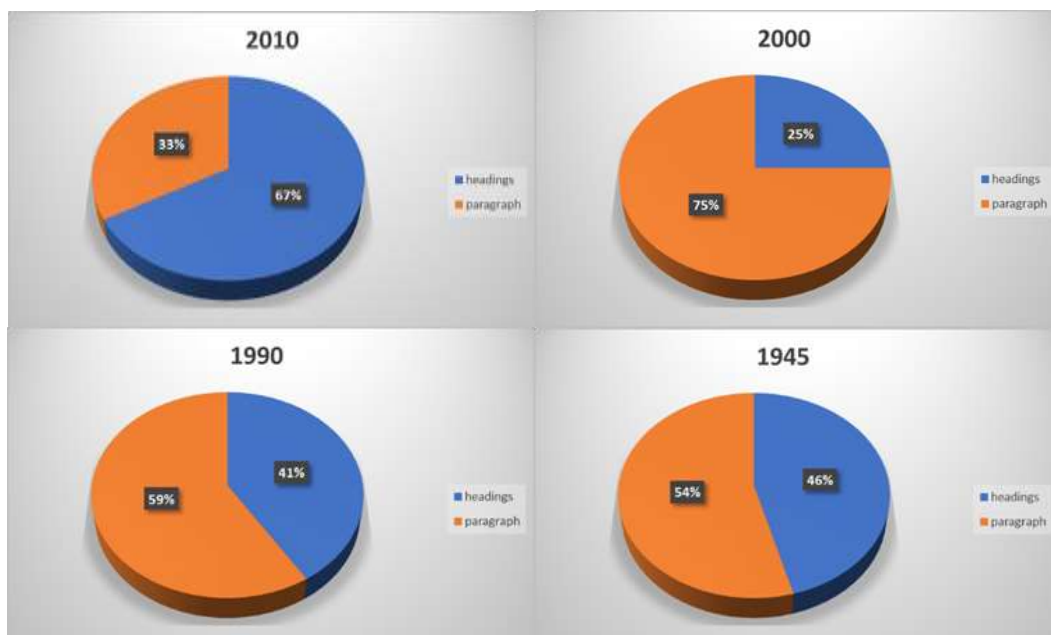
analysis showed that of all 50 sports scientific journals examined, 21 accepted abstracts organized around headings (Harvard Style) and 29 – a single paragraph abstracts (APA Style, Chicago Style). However, we did not find any statistically significant differences and correlations between the type of abstract and the country where a journal is published ( $\chi^2=3.16$ ;  $\alpha=0.53$ ;  $C=0.24$ ).



**Figure 2.** Types of abstract according to the country of origin

About 80% of the journals were founded before the year 2000, 16% of the scientific editions were started at the beginning of this century and only 6% appeared after 2010. The majority of the abstracts submitted in the older sports scientific editions were in accordance with APA Style and Chicago Style, i.e. organized as a single paragraph (**Figure 3**). While in the oldest journals the percentage of two types of abstract was almost the same, in the scientific magazines founded at the end of the last century the number of abstracts with headings decreased. Since the year 2000, the

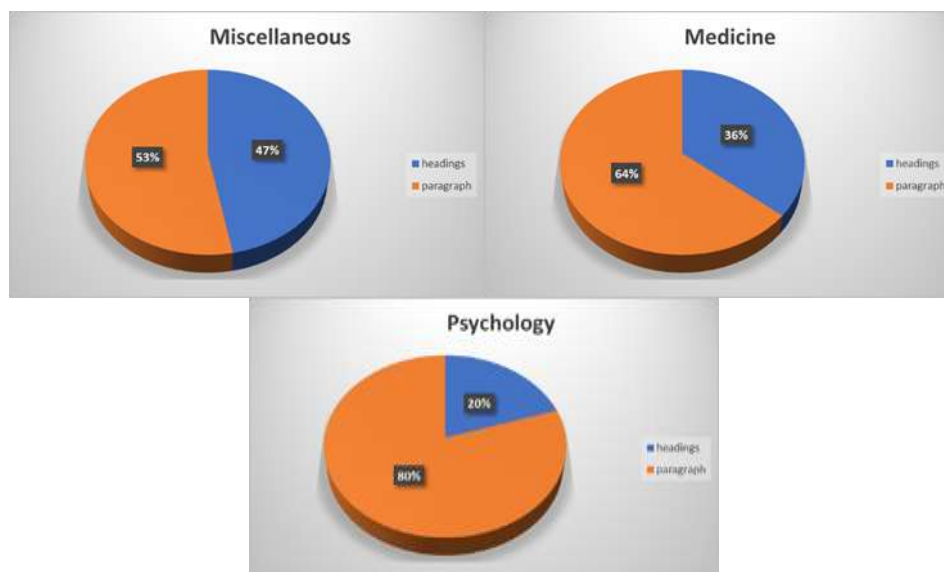
ratio has been in favor of single-paragraph abstracts. The reversed trend could be observed in the journals which appeared in the more recent years but because of their small number in the sample analyzed, we believe we cannot draw any strong conclusions. Despite the above-mentioned differences, no statistically significant correlations were found between the type of abstract and the coverage (number of years of publication) – ( $\chi^2=1.81$ ;  $\alpha=0.61$ ;  $C=0.19$ ).



**Figure 3.** Types of abstract according to the coverage

In order to group the journals into content categories we divided them into three types: miscellaneous, which were the highest in number (34 journals), followed by medical (11

journals), and psychological (5 journals) sport related editions. In each category, we found more single-paragraph abstracts than abstracts with headings (**Figure 4**).



**Figure 4.** Types of abstract according to the category

The biggest difference was observed in the journals related to sports psychology where the number of APA Style and Chicago Style abstracts was significantly higher. In the medical journals related to sports science the abstracts written according to Harvard Style were slightly above one third of the total number. In the category “miscellaneous” the two types of abstracts were almost equally presented. However, although the numbers differed, no statistically reliable differences were found as regards the type of abstract and the category of the journal  $\chi^2=1.94$ ;  $\alpha=0.47$ ;  $C=0.17$ .

## CONCLUSION

Writing a good abstract is more of a learnt skill than art. Regardless of the kind of style, we will choose, it follows almost the same outline we have to adhere to. All abstracts should include some key words and follow strict grammatical rules as regards the use of verb tenses and sentence structure.

The abstracts organized as a single paragraph are the prevailing type of abstracts submitted in the sports related scientific journals worldwide. However, on the basis of the conducted survey we can assume that there are no obvious criteria for adopting a particular scientific writing style and each journal has their own traditions and favored approach. It is advisable that we should check with the editor of the journal we want to submit our

manuscript for details on the appropriate style of the abstract before choosing how to write it.

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