



Basic Physical Education and Sport Science English Word List for Physical Education Students

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Article information	Abstract
<p>Article History: Received: September 1, 2018 Accepted: October 29, 2018 Available online: December 29, 2018</p> <p>Keywords: Word list Physical education and sport science Corpus</p>	<p><i>This study is a corpus-driven study that aims to explore the use of words in Coxhead's Academic Word List (AWL) and West's General Service List (GSL) and also non- GSL and non- AWL in journal articles in the field of physical education and sport science. A 1.1 million-word corpus called the Physical Education and Sport Science Research Articles Corpus is created for this study. The corpus consists of 280 research articles that have been published in seven international journals in the field of physical education and sport science. The result suggests that both GSL and AWL can help students focus on the right vocabulary when learning Technical English. The corpus helps students to directly focus on the words that they will see the most in the text they have to study. Moreover field specific word list is conducted in this research. Field specific word lists can help students learn necessary words which are also important for their field of study.</i></p>

INTRODUCTION

It has been accepted for many years now that the ability to read depends initially on adequate lexical knowledge (Ward, 2009). Therefore, learners of English as a Foreign Language (EFL) often find themselves with limited knowledge of vocabulary as an obstacle in the way of their success in academic discourse (Mozaffari & Moini, 2014). Students who study in Physical Education Department, Faculty of Education, Kasetsart University have also experienced this kind of problem. Students usually learn lots of words, mainly those most frequently used during the initial stages of instruction in second or foreign language acquisition (Zakeri & Khatibi, 2014). The Basic Physical Education and Sport Science English Word List is conducted in order to support students' vocabulary learning. Schmitt (2008) emphasizes that language learners require large vocabularies to effectively use a second language, and as a result high vocabulary targets need to be focused and pursued. Therefore the Basic Physical Education and Sport Science English Word List is conducted basically from word frequency of the corpus. Sakeri and Khatibi (2014) mention that nobody can deny the vital role of vocabulary in learning a language, especially through words that all four language learning skills can be presented. But if vocabulary is so important, how can it be learned? Which techniques can be employed to enlarge students' vocabulary bank? Different experts as well as textbook designers have suggested different techniques. Hence, vocabulary compilation is needed to be conducted in order to add more technique to vocabulary learning.

Nation (2001) states that high-frequency words constituted the majority of running words in all types of writing in different genres and fields of study. That is why these words are the most accessible words for language learners (Shabani & Tazik, 2014). Shabani and Tazik (2014) also emphasize that language proficiency requires mastery of considerably larger number of words. Thus Mudraya (2006) believed that the use of language corpora in the classroom could improve students' knowledge of the language and their ability to use it effectively. Hence the Physical Education and Sport Science corpus can add more corpora into the classroom.

In this corpus, there are seven international research journals in the field of Physical Education and Sport Science, all of which are high impact factor journals. I have used the contents from these journals as authentic sources of reading materials in the textbook I have created, 01355206 Technical English (English for Physical Education), for students in the Department of Physical Education, Faculty of Education, Kasetsart University, Thailand. I found that vocabulary from these journals are very important for these students to improve their reading comprehension. Students in this department need to complete Technical English course as their requirement to graduate. Moreover, before graduating from the university, these students need to conduct a research and these seven international research journals are the most popular research journals that they use as resources for their researches. I personally believe that the vocabulary in these research journals is important for these students to complete the course and to conduct their researches. Therefore the physical education and sport science corpus is conducted.

The purpose of this study is to explore the frequency of the GSL and AWL content word forms and non- GSL and non- AWL content word forms as field-specific words that are used in the field of physical education and sport science. The results reported in this study come from an analysis of a large corpus of journal articles published in seven international physical education and sport science research journals with more than one million running words. The use of a large corpus in this study enables the researchers to create a more extensive list of GSL and AWL words that are frequently used in physical education and sport science journal articles. Furthermore, this study also explores the frequency of non- GSL and non- AWL content word forms. The results highlight other important words in physical education and sport science that deserve further attention.

The research questions are as follows:

1. What GSL and AWL content word forms occur with high frequency in the Physical Education and Sport Science Research Articles Corpus?
2. What non-GSL and non- AWL content word forms occur with high frequency in the Physical Education and Sport Science Research Articles Corpus?



LITERATURE REVIEW

Why corpus

A corpus is a collection of texts, of the written or spoken word, which is stored and processed on computers for the purposes of linguistic research. Corpora can provide language instructors and analysts with insights into typical features of their linguistic structures and language use (Renouf, 1987 as cited in Shamsudin et al., 2013). It is also becoming an increasingly useful tool as resources and models from which teaching-learning and training materials are based. Recent research suggests that corpora can be very useful in helping learners succeed in language learning. Besides that, contribution of using corpus data in teaching language from researchers and teachers have been made which lead to the enrichment of language learning setting. (Shamsudin et al., 2013). As Mudaraya (2006) states, the availability of language corpora to language learners and teachers offer promising opportunities in learning a language. They allow learners to set up and carry out their own language analyses with the help of computer concordancing programs that are aimed at identifying collocations, or word partnerships, in which certain words co-occur in natural text with greater than random frequency. Currently, there is a wide range of work based on corpus data for students and teachers. Adding one which is about physical education and sport science will help in vocabulary learning for students who study in physical education or sport science.

Since the increasing number of second language students required to read academic texts in English as a second language, the study of academic texts has become the focus of much corpus-based research in recent years. Within English for Academic Purposes (EAP), many researchers have examined academic texts in order to find specific and distinguishing features of academic registers (Valipouri & Nassaji, 2013). It has been argued that foreign language teachers normally create language learning materials that use simple language for their students which may results in the students experiencing problems in handling authentic examples that use much more complicated language (McEnery & Wilson, 1996 as cited in Shamsudin et al., 2013). So problems in learning English vocabulary concern not only the learner's lack of vocabulary knowledge of the terms related to their occupation or field of study, but also their lack of awareness of which terms are deemed to be 'related' (Tangpijaikul, 2014). Hirsh and Nation (1992) once said that knowledge of vocabulary affects reading comprehension and that a reader's size of vocabulary can make reading more valuable. Thus reader should have both breadth of knowledge and depth of knowledge. Breadth of knowledge refers to "the number of words the meaning of which one has at least some superficial knowledge" (Qian, 2002). While depth of knowledge is crucial in that one needs to have sufficient knowledge of a word in order to be able to understand it and use it appropriately (Schmitt, 2008). However, Vongpumivitch et al. (2009) states that deciding which words are worth teaching has not been a simple matter for the teachers. The division of vocabulary can be classified into four levels – high frequency words, academic vocabulary, technical vocabulary, and low frequency words – indicates that some vocabularies need more attention in different phases of language learning or for different purposes. 'The high frequency words deserve individual attention (Khani & Tazik, 2013). Hence, the integration of the lexical approach with a corpus linguistic methodology can enrich the learners' language experience and raise their language awareness (Mudraya, 2006).

Corpus linguistics is a methodology which can be described as a study of natural language on examples of real life language use via a corpus (McEnery & Wilson, 2001), defined as a body of text that is representative of a particular variety of language and is stored on a computer. There are many ways to define a corpus, but the agreement is gaining ground that a corpus is a collection of (1) machine-readable (2) authentic texts which are (3) sampled to be (4) representative of a particular language or language variety (McEnery et al., 2006). Corpora have been proven to be useful in investigating language learning issues. It has also been influential in vocabulary learning. Through the years, data-driven vocabulary learning has been recognized as one of the most effective ways of learning specialized vocabulary (Shamsudin et al., 2013). Thus, insufficient academic vocabulary knowledge has been strongly associated with the oft-cited 'gap' in academic achievement that exists between certain groups of students (Gardner & Davies, 2014). A variety of corpora based on different disciplines are established and analyze in order to improve the learning efficiency of learners of academic vocabulary in an academic environment (Hajiyeva, 2015). So corpus always plays a vital role in helping students to improve language learning, especially vocabulary. The availability of language corpora to language learners and teachers adds more dimension to the criteria for success in learning a language (Mudraya, 2006). Therefore, creating a word list by using the help of corpus is necessary and thus it can be helpful in allowing students to focus on the vocabulary that can be useful for them to comprehend the reading.

General Service List (GSL)

In 1953, Michael West published a remarkable list of several thousand important vocabulary words known as the General Service List (GSL). The General Service List (GSL) consists of 2000 words which are divided into the first 1000 words and the second 1000 words. The General Service List (GSL) contains 2,000 of the most frequently used words in English, covering around 80 percent of running words used in any text (West, 1953). These word list coverage tell only part of the truth. The 2000 GSL "words" (which provide the 75–80% coverage) are in fact headwords or word families, and if all the family members are counted, then the list in fact comprises over 8000 words (Ward, 2009).

For beginner learners the main question is always where to start to learn vocabulary. General vocabulary wordlists can assist in this process by providing common vocabulary items that occur frequently across different texts (Brezina & Gablazova, 2015). The early study by Michael West (1953) presented a list of 2000 word families that are most frequently used in the English language, the so-called General Service List (GSL) (Tangpijaikul, 2014). It is a good idea to familiarize English as foreign language learners with these words, given the assumption that words that are used more frequently deserve more attention than words that are used less frequently (Tangpijaikul, 2014). Hence, starting to learn vocabulary from the most common GSL in particular text will help students to focus on the right words they need to know.

Based on Nation's original classification, learners should master the high-frequency words (for example, the 2000 most frequent words in the GSL) before they learn academic words (Lei & Liu, 2016). It is also suggested that after learning the GSL words, students studying English for Academic Purposes need to focus on general academic vocabulary (Valipouri



& Nassaji, 2013). In other words, students need to learn the 1st 1000 GSL words, and then the 2nd 1000 GSL words. After that, general academic words should be added from the 570 word families identified in Coxhead's AWL (Valipouri & Nassaji, 2013; Ward 2009). In the meantime, GSL is still considered a word list that needs to be focused on in order to reinforce the strength of vocabulary use for students. In addition, these word list coverage figures tell only part of the truth. The 2000 GSL "words" (which provide the 75–80% coverage) are in fact headwords or word families, and if all the family members are counted, then the list in fact comprises over 8000 words. Likewise, the 570-word AWL expands to about 3000 when all family members are counted (Ward, 2009). He also mentions that these extra words are inflected and derived forms of the headwords. It has been clear that not all these forms pose as much difficulty as new, separate headwords, and it is a common assumption of vocabulary studies that learners readily master inflections as well as the "easier" derived forms (for an ease/difficulty ranking of all these affixes). Somehow it is simply misleading to assume, as so many writers seem to, that a student who knows one family member knows all the others. And in any case if the reader accepts the general point that the inflected and derived forms add substantially to the learning load of the lists, then it seems reasonable to claim that our incoming undergraduates are even further from their lexical target than the basic headword figures suggest. (Ward, 2009). Hence, GSL is not only the 2000 words but it actually can divide into about 8000 words. So focusing on only particular words of GSL will help students to limit their vocabulary size in the class and help them put straight focus to the vocabulary they need to know in particular class.

Academic Word List (AWL)

Besides the General Service List, all of the existing discipline-specific word lists so far have been developed using Coxhead's (2000) method that excludes general high-frequency words (Lei & Liu, 2016). Following the publication of Coxhead's (2000) Academic Word List, attempts have been made to investigate the importance and relevance of this general academic vocabulary list in a range of different disciplines. Coxhead's academic word list consists of 570 word families and 3107 types, from 4 domains, arts, commerce, law, and science (Mozaffari & Moini, 2014).

In the past few years, several cross-disciplinary corpus-based studies have been carried out on the frequency and coverage of 570 word families from Coxhead's (2000) academic word list (AWL) (Shabani & Tazik, 2014). Academic vocabulary refers to the lexical items that are relatively frequent across a wide range of academic texts but are infrequent in other genres (Nation, 2001). By using range and frequency as the criteria for word selection and compiling representative corpora, Coxhead (2000) developed an Academic Word List (AWL), containing 570 word families, which is derived from a corpus of 3.5 million running words of written academic texts. According to Coxhead (2011), the aim of this list is to help EAP teachers set goals for their students in vocabulary learning. The original aim of the list was to meet the vocabulary needs of first year students studying in different academic disciplines at the researcher's university, and who needed to read texts in English for their academic studies (Valipouri & Nassaji, 2013). The academic words in the Academic Word List (AWL) consist of 570 word families that are most commonly found in academic texts of different genres and

fields (Coxhead, 2000 ; Khamphairoh & Tangpijaikul, 2012). Coxhead built the list, excluding GSL, but including those words that occurred frequently and with a certain degree of uniformity across a wide range of disciplines and genres in 4 domains: arts, commerce, law, and science. The Academic Word List provides coverage of around 8.5-10% of the words in an academic text. Combined with the words in GSL, it was expected to account for around 90% of academic texts (Martinez et al., 2009). Academic vocabulary is important for academic study for two reasons. First, as academic vocabulary is high-frequency in academic texts, students' academic vocabulary knowledge can decrease the burden of unknown words in academic texts (Nation, 2001). It may result in better comprehension of academic English (Townsend et al., 2012). Second academic vocabulary knowledge might positively impact students' academic writing (Khani & Tazik, 2013) and academic achievements (Townsend et al., 2012).

Literature suggests that there were many research studies conducted on the use of the AWL in different areas. For instance, Vongpumivich (2009) explored the use of words in Coxhead's (2000) Academic Word List (AWL) in journal articles in the field of applied linguistics, Martinez et al (2009) studied Academic vocabulary in agriculture research articles, Valipouri and Nassaji (2013) explored the academic vocabulary in chemistry research articles, Shabani and Tazik (2014) studied Coxhead's AWL across ESP and Asian EFL Journal Research Articles (RAs), and Mozaffari and Moini (2014) explored the Academic Words in Education Research Articles. The usefulness of AWL in different fields of study needs to be investigated. Though there are many studies conducted on the academic vocabulary across different fields of study (e.g. Coxhead, 2000; Nation, 2001; Ward, 2009; Martinez et al., 2009; Khani & Tazik, 2013; Gardner & Davies, 2014; Shabani & Tazik, 2014), one of the major findings of these studies is that insufficient knowledge of academic vocabulary causes difficulty in reading and writing academic texts with another major finding in the development of academic word lists which have had important effects on teaching and learning academic vocabularies in EAP and ESP contexts (Khani&Tazik, 2013; Tangpijaikul, 2014). In this study, the usefulness of AWL in physical education and sport science research articles is focused upon in order to create a word list that meets the needs of physical education students in Kasetsart University, Bangkhen Campus, Thailand.

Even though some scholars (e.g. Gardner & Davies, 2014) have challenged the usefulness of AWL, in some fields the AWL word families are relatively important (Mozaffari & Moini, 2014). Coxhead and Nation (2001) stated that the main strengths of the Academic Word List as a teaching instrument in ESP contexts had been thought to be its coverage, as the AWL and the GSL combined cover about 90% of the words in a text, which implied that a learner would find only one unknown word in every 10 running words. So this study mainly tries to explore the usefulness of the AWL word forms as well as GSL content word forms in the physical education and sport science research articles in order to create the word list for physical education students in Kasetsart University, Bangkhen campus, Thailand.



Academic vocabulary

Academic vocabulary refers to the lexical items that are relatively frequent across a wide range of academic texts but are infrequent in other genres (Coxhead & Nation, 2001 ; Lei & Liu, 2016). As a result, several academic word lists have been developed to facilitate the learning and teaching of general academic vocabulary (Lei & Liu, 2016). Accordingly, they argue for the need to develop academic vocabulary lists for various specific disciplines. In recognition of this need, several discipline-specific academic word lists have been developed, such as Hsu's (2014) list of 729 most frequent word families in engineering compiled from engineering textbooks; Mudraya's (2006) Engineering Academic Word List boasting 1200 word families; Wang, Liang, and Ge's (2008) Medical Academic Word List (MAWL) registering 623 word families; and Yang's (2015) Nursing Academic Word List (NAWL) containing 676 word families in the nursing discipline.

One important point to note regarding these discipline-specific or field-specific word lists is that all of them followed Coxhead's (2000) practice in the development of the general AWL by excluding the general high-frequency words such as those in West's (1953) 2000-item General Service List (GSL) or those in the BNC's first and second 1000 most frequent words. Such a practice seems to have been motivated by the assumption that language learners generally grasp high-frequency words before they learn low- or lower-frequency words and that academic words are of a lower frequency in comparison with general high-frequency words. This assumption may have been influenced by Nation's (2001) classification of words into four levels: (1) high-frequency words, (2) academic words, (3) technical words, and (4) low-frequency words. It is important to note, however, that, recognizing the overlap among high-frequency, academic, and technical words, Nation (2013) has restructured his classification system by adding mid-frequency vocabulary and putting academic and technical vocabulary under the "specialized" category. (Lei & Liu, 2016)

Vocabulary use often varies significantly across academic disciplines, hence it is important to develop discipline-specific academic list. (Lei & Liu, 2016) Gardner and Davies's (2014) recent work on a new academic vocabulary list has challenged Coxhead's (2000) method because many general high-frequency words have a much higher frequency in academic English than in general English and often have specific meaning in academic English. However, the language in the textbook may be written for academic purposes rather than occupational or career-oriented purposes, so relying on the textbook alone may lead to the student's being unaware of the way in which the terms are used in reality. (Tangpijaikun, 2014) Therefore discipline-specific or field-specific word list in physical education and sport science is created in this research in order to urge physical education students to aware of which words they need to focus.

Special attention should be paid to the vocabulary in English for academic purposes (EAP) contexts. Most EAP teachers would agree to include vocabulary as part of their courses (Vongpumivitch et al., 2009). Laufer (1994, p.21 as cited in Khani & Tazik, 2013) found that in EAP contexts, writing progress can be measured through lexical progress since lexical quality and writing quality are interconnected. He believes that a well used rich vocabulary

positively affects the learners' writing ability. Hirsh and Nation (1992) state that knowledge of vocabulary affects reading comprehension and that a reader's size of vocabulary can make reading more pleasurable. However, deciding which words are worth teaching has not been a simple matter for the teachers (Vongpumivitch, et al., 2009). Similarly, Coxhead discusses that 'one of the most challenging aspects of vocabulary learning and teaching in English for academic purposes (EAP) programs is making principled decisions about which words are worth focusing on during valuable class and independent study time' (2000, p.213 as cited in Khani & Tazik, 2013). Hence, Physical Education and Sport Science Research Article Corpus is necessary for teachers to decide which words are worth focusing on when creating material for Technical English class.

METHODOLOGY

This corpus-driven study focuses on frequency, coverage and distribution of the words from both the Academic Word List and General Service List and non- Academic Word List and non- General Service List in physical education and sport science research articles. The goal of this research is to develop a Physical Education and Sport Science English Word List for Physical Education students in order to meet the objective of English subject, Technical English (for Physical Education), in Faculty of Education, Kasetsart University, Thailand. Most of the students from the Department of Physical Education, Faculty of Education, Kasetsart University, graduated high school level from sport schools all over Thailand. In these schools, they usually put their effort to sports rather than academic. This resulted in the lack of adequate knowledge, especially English, to complete the course requirement easily. In order to help these students learn vocabularies in this course, I decided to build a representative corpus. I selected international research articles from seven high impact factor journals in the field of Physical Education and Sport Science from the year 2012 to 2017. I have also used contents from these journals as authentic reading materials in the text book I have created for these students. Besides that, these students also use these seven journals as their resources when they conduct their research as the requirement to graduate. So there seems to be a need to develop a word list of corpus-driven physical education and sport science vocabulary or word lists to meet the needs of these physical education students.

Research questions

1. What GSL and AWL content word forms occur with high frequency in the Physical Education and Sport Science Research Articles Corpus?
2. What non-GSL and non- AWL content word forms occur with high frequency in the Physical Education and Sport Science Research Articles Corpus?

The Physical Education and Sport Science Research Articles Corpus was specifically compiled for this study. It consists of 280 research articles that have been published in seven international journals in the field of physical education and sport science, namely, Journal of Physiology, Athletic Training Journal, Journal of Science and Sport, Journal of Sport Science, Psychology of Sport and Exercise Journal, Bones and Joint Journal, and Sport Medicine Journal. These seven journals were selected because they are all internationally renowned with high impact factor and cover a wide range of topics in the field of physical education and sport



science. Each journal was verified by instructors and Master's degree students in the field of physical education and sport science. The instructors recommend students in both Master's degree level and Bachelor's degree level to use these journals as their primary sources when they conduct their researches.

To compile the Physical Education and Sport Science Research Articles Corpus, the articles were collected in their electronic version with their reference lists, appendices, footnotes, figures, tables, and acknowledgements were deleted. It should be noted that 280 articles were randomly selected and all of the articles published in this period were not obviously included. The goal was to collect 40 research articles from each of the seven journals counting from the year 2012 - 2017 which was when the study was conducted.

The final Physical Education and Sport Science Research Articles Corpus has approximately 1.1 million words with 25,010 word types and consists of the following:

Forty articles from Journal of Physiology (with 52,731 running words and 5,726 word types)

Forty articles from Athletic Training Journal (with 197,661 running words and 7,802 word types)

Forty articles from Journal of Science and Sport (with 125,759 running words and 6,529 word types)

Forty articles from Journal of Sport Science (with 169,158 running words and 8,182 word types)

Forty articles from Psychology of Sport and Exercise Journal (with 236,534 running words and 10,253 word types)

Forty articles from Bones and Joint Journal (with 139,390 running words and 8,560 word types)

Forty articles from Sport Medicine Journal (with 180,326 running words and 8,945 word types)

Nagy and Townsend (2012) reveal that vocabulary learning must arise in authentic contexts, with learners having many opportunities to learn how target words interrelate with, collect meaning from, and sustain meanings of other words. Hence, the compilation of vocabularies from these physical education and sport science journals will help physical education students in English vocabulary learning.

The computer software used for the analysis are AntConc 3.5.7 and AntWordProfiler by Laurence Anthony and Doc Compare by Wirete Aroonmanakun. AntConc is a program for the analysis of word behavior in texts. Among its various functions, it counts each repeated instance of a word (token) and displays it only once (type) together with its frequency (number of tokens found). After that, AntWordProfiler is used to see the frequent AWL and GSL in the corpus. Then the program Doc Compare by Wirete Aroonmanakun is used to screen out the words between AWL, GSL, and the words in the corpus.

For the study, I first determine the frequency and distribution of word types and tokens in the corpus by using AntConc software. Ant with the help of AntWordProfiler which is a freeware tool for profiling the vocabulary level and complexity of texts, the AWL and GSL words presented in the corpus and their coverage are identified.

In order to answer the first research question which is about frequency and the use of AWL and GSL content word forms in the Physical education and Sport Science Research Articles Corpus, an attempt was made to choose those AWL and GSL content word forms that frequently occurred in the compiled corpus of this study. By using range and frequency as the criteria for word selection and compiling representative corpora, I follow Coxhead's criteria. In deriving AWL, Coxhead used 3.5 million running words and the words to be included in the AWL must at least occur 100 times in entire corpus and appeared at least 10 times in all resources. Following Coxhead's criteria in range and frequency, the Physical Education and Sport Science Research Articles Corpus which contains more than 1.1 million words, a word to be included in the list must at least occur 30 times in the corpus and appear at least 3 times in all journals. The list is created with the help of the AntConc 3.5.7 and AntWordPorfiler programs.

After using AntConc software program to see the frequency of the words in the corpus, as expected, the most frequent and widely distributed words in the corpus are function words like the/of/and/to/in/a/for/with/was/that/were/as/is/on/this/by/be/or/at just like Ward (2009) mentioned in his research. In order to answer the first research question which aimed at exploring only the most frequent AWL and GSL content words that are found in the Physical Education and Sport Science Research Articles Corpus, I have used stop button in Ant Conc software program to screen out all function words from the result. The same criteria explained above is employed to obtain the GSL content words that appear in the Corpus frequently. Just like Ward (2009) I have omitted function words because many of them tend to have many meanings and these meaning tends to be difficult to explain or translate in isolation, as they often deal with abstract or grammatical.

In order to answer the second question which is about non-GSL and non-AWL content word forms that appear frequently in the corpus, I use AntConc to see the frequency of the words in the corpus. Then using the GSL and AWL as match lists with the help of DocCompare program to screen the GSL and AWL out of the corpus. For AWL, 3107 word forms in 570 word families are used. While only 2,000 head words appear in GSL. Therefore I have to spread those head words into word families. For example, know, knows, knew, known, knowing or customer, customers. For verbs, I used all the possibilities of verb tenses. And for noun, I considered all possibilities of singular and plural. I also use all possibilities of spelling in both American English and British English, such as colour, colours, color, colors or realise, realises, realised, realising, realize, realizes, realized, realizing. Meanwhile, I do not spread the words which are adjectives and adverbs since it might change the meaning of the words. Thus the result might show the comparative and superlative forms of the words. After spreading all the GSL head words, 4,526 words appear as match list.



RESULTS

From research question: What GSL and AWL content word forms occur with high frequency in the Physical Education and Sport Science Research Articles Corpus? The Lexical Profile Statistics are as follows:

The result from all journals with frequency 30 are as follows:

LEVEL	FILE	TOKEN	TOKEN%	CUMTOKEN%	TYPE	TYPE%	CUMTYPE%	GROUP	GROUP%	CUMGROUP%
1	1_gsl_1st_1000.txt	1316	36.23	36.23	1316	36.23	36.23	658	26.96	26.96
2	2_gsl_2nd_1000.txt	378	10.41	46.64	378	10.41	46.64	225	9.22	36.18
3	3_awl_570.txt	768	21.15	67.79	768	21.15	67.79	388	15.90	52.08
0	-	1170	32.21	100	1170	32.21	100	1170	47.93	100.01
TOTAL	3632	3632				2441				

There are 768 AWL word forms that appeared frequently in the Physical Education and Sport Science Research Articles Corpus, which accounted for 21.15%. However, when using the result of all journals with frequency 30 together with each journal with frequency 3, the number of the AWL appears only 217 word forms. When putting 217 words into word families, there are 153 word families that appeared in the Physical Education and Sport Science Research Articles Corpus out of 570 word families in AWL. From the findings, if you compare all running words in the corpus which have frequency 30 with the word in AWL, there are 768 AWL words that appear frequently. But when you compare all running words in the corpus which have frequency 30 with running words which have frequency 3 from each journal, there are only 217 AWL words that appear frequently. (See Appendix 1)

Moreover, there are some AWL words which are worth to pay attention for. From the result, the words which are about process such as method, occur, outcome, etc. appear frequently in the corpus. Meanwhile the word which are about evaluation such as assess, equivalent, contrast, etc. also appear frequently in the corpus. The words which related to physical fitness and sport such as injury, energy, mechanism, impact, physical, etc. are also found frequently. From this finding, the words in the AWL which are about research process and the evaluation are often found. This can be assumed that besides words related to physical education, physical education students need to focus on the vocabulary which is about research or research process.

Besides AWL, there are 1,694 GSL word forms that appeared frequently in the Physical Education and Sport Science Research Articles Corpus, which accounted for 46.64%. From the result, the first 1,000 GSL words appear more frequently with 36.23%, while second 1,000 GLS words appear only 10.41%. When using the result of all journals with frequency 30 together with each journal with frequency 3 with the help of DocCompare program, the number of the GSL content word forms appears only 706 word forms. In order to get these 706 word forms, function words, such as the, of, an, to, in, a, for, etc., names, abbreviations, cardinal numbers, ordinal numbers, colors, countries, nationalities, prefixes are deleted. When putting 706 words into word families, there are 472 GSL word families that appeared frequently in the Physical Education and Sport Science Research Articles Corpus. (See Appendix 2)

Among all, some researchers such as Coxhead (2000) attempted to define and assemble a comprehensive and general AWL generalizable to all the academic contexts. Following such tendencies, many researches have tried to examine the generality of provided AWL and some others have attempted to create a new word list specific for their fields of study (Shabani & Tazik, 2014). Along with the above mentioned studies, this study attempted to examine the generality of Coxhead's (2000) AWL and West's GSL (1953) across the Physical Education and Sport Science Research Articles Corpus. The corpus helps students to directly focus on the words that they will see most frequent in the text they have to study. Instructors can also use these word lists to create the materials to encourage physical education students to get more familiar with vocabulary they have to often see.

From the second research question: What non-GSL and non- AWL content word forms occur with high frequency in the Physical Education and Sport Science Research Articles Corpus?

There are 1,480 words which are non- GSL and non- AWL word forms that appear frequently in the Physical Education and Sport Science Research Articles Corpus. Among all 1480 words, there are also some function words, abbreviations such as acl, aclr, acsm, bm, bmc, bmd, bmec, bmi, bmx, ect., and prefixes such as con, dis, pre appear frequently in the corpus. After deleted all function words, abbreviations, and prefixes, there are 1091 words appear frequently. When putting 1,091 words into word families, there are 885 word families that appear frequently in the Physical Education and Sport Science Research Articles Corpus. From the finding, there are many words that are worth to give attention to. There are some words that are not frequently found in the general context such as abdominis, accelerometry, acylated, cardiorespiratory, contralateral, cryotherapy, locomotor, etc. but often found in the Physical Education and Sport Science Research Articles Corpus. These 1,091 words can be classified into many semantic groups. Some words are in medical area such as anteroposterior, anthropometric, arthritis, bilateral, artery, aseptic, asthma, clinic, coronary, etc. Some words are in the area of physical fitness or sport such as basketball, angle, aerobic, athlete, burnout, cyclist, concussion, defenders, kinematic, etc. Though these words are found less often in general contexts, they are often found in physical education and sport science contexts. Hence, these words are worthwhile for physical education students to pay attention to. Besides vocabulary in the field of physical fitness and sport, physical education students may need to focus on the words in the medical area as well since they appear frequently in the corpus of physical education and sport science. (See Appendix 3)

All of these words which are non- AWL and non- GSL are the words that appear frequently in the Physical Education and Sport Science Research Article Corpus. They are words that are more to field specific words. Physical education students needs to pay attention to all of these field specific words as well as AWL and GSL words which appear frequently in the corpus in order to get better comprehension when reading the research articles in the field of physical education and sport science. The list is also helpful for instructors who need to further their focus on which vocabulary is useful for their students. Reading materials can be created with the help of this list. Field specific word list is needed to be classified in semantic groups. Thus classifying these words into semantic groups is suggested for further study.



CONCLUSION

Important benefits of academic word lists related to specific disciplines have been suggested for language instruction (Mudraya, 2006 ; Valipouri & Nassaji, 2013). They provide a useful guide for teachers to help them decide which vocabulary to focus on (Nation, 2001 ; Valipouri & Nassaji, 2013). Shabani & Tazik (2014) said that academic words had plenty of chance for occurring in academic texts from different genres and fields. An increasing number of research shows that vocabulary learning and teaching is one of the main concerns in different fields of study and contexts (Mudraya, 2006 ; Nation, 2006 ; Ward, 2009; Shabani & Tazik, 2014). As a result, focusing on vocabulary alone can help students broaden their reading comprehension. From the assumption of Qi (2016), it can be inferred from his findings that the frequency and the number of the academic wordlist items define the lexical coverage of an academic wordlist; and it is noteworthy that the effectiveness of academic wordlists vary with different learners' lexical sizes. The present study was an attempt to investigate the frequency of Coxhead's (2000) AWL and West's (1953) GSL in the compiled corpus of physical education and sport science research articles. The frequency of non-AWL and non- GSL is also investigated in this corpus. To this end, a 1.1 million-word corpus was created in the field of physical education and sport science consisting of 280 research articles published in seven journals during 2012 to 2017. This study found that the coverage of AWL word forms in the Physical Education and Sport Science Research Articles Corpus was 21.15%. When considering the coverage of GSL word forms in the Physical Education and Sport Science Research Articles Corpus, it accounted for 46.64%. From these findings, both AWL and GSL word forms do not cover all the reading materials in the field of physical education and sport science.

Though students need to focus on both AWL and GSL, field specific word lists are encouraged to further focus. Field specific lists can help students learn necessary words which are important for their field of study. Therefore, the field specific words in this field of study are conducted. There are 1,091 content words which are non-GSL and non- AWL appear frequently in the corpus. From all 1,091 words, there are not only word which related to physical education and sport science appear frequently in the corpus, but also words which are in medical area appear frequently in this corpus. Hence, grouping these words into semantic groups is suggested for further study in order to lead students to focus more directly to which words are needed to study first.

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APPENDIX 1

AWL word families which appear frequently in the Physical Education and Sport Science Research Article Corpus

achieve, achieved	demonstrate, demonstrated, demonstrates	initial, initially
adequate	design, designed	injury
adequate	despite	interaction, interactions
administration	distinct	internal
adult	distribution	intervals
affect, affected	documented	intervention, interventions
alternative	duration	investigate, investigated, investigating, investigation
analyses, analysis	dynamic	involved, involving
apparent	energy	issue
approach	ensure	linked
appropriate	environment	location
area, areas	equivalent	maintain, maintained
aspects	established	major, majority
assess, assessed, assessing, assessment	estimated	manipulation
assumption	evaluate, evaluated	maximum
authors	evidence	mechanism
available	exposure	medical
benefit, benefits	external	method, methodological, methods
capacity	factor, factors	modified
categories	final, finally	negative
challenges	focus, focused	non
co	found	normal
complex	foundation	obtained
concluded, conclusion, conclusions	function	occur, occurred, occurring, occurs
conducted	furthermore	outcome, outcomes
confirmed	generated	over
consequently	highlighted	overall
consisted, consistent	hypothesis	parameters
context	identical	participant, participants, participation
contrast	identification, identified, identify, identifying	percentage
contribute, contributed, contributing	impact	period
conversely	implications	phase



data decline defined predict, prediction previous, previously primarily, primary prior process promote proportion prospective protocol published range ratio relevance, relevant reliability require, required, requires research response, responses	index indicate, indicated, indicates, indicating individual, individuals revealed role selected, selection series shift significance, significant, significantly similar, similarly sites source, sources specific, specifically statistical, statistically status strategies, strategy structures subsequent, subsequently sufficient	physical positive potential, potentially summary target technique, techniques traditional trend ultimately underlying unique utility variability, variable, variables, variance, variation, varying version via visual volume whereas whereby
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APPENDIX 2

GSL content word forms which appear frequently in the Physical Education and Sport Science Research Article Corpus

ability	assumption	conducted
able	attempt	confirmed
absence	attention	consider, consideration
according	authors	consisted
account	available	consistent
achieve, achieved	average	constant
across	back	content
action	balance	context
active	base, based	contrast
activities, activity	basis	contribute, contributed,
		contributes, contributing
		control, controlled
actually	be	core
addition, additional	become	course
address	believe	create
administration	benefit, benefits	critical
adult	beyond	cross
advance	blood	current, currently
advantage	body	cycle
affect, affected	brain	data
again	brief	date
against	capacity	day
age	carried	decline
agreement	case	decrease, decreased,
aim, aimed	categories	decreasing
		defined
allow, allowed, allowing	cause	degree
alone	certain	demand
along	challenges	demonstrate, demonstrated,
also	change, changed, changes	demonstrates
		depending
alternative	characteristics	derived
although	clear	described
among	clearly	design, designed
amount	clinical	despite
analyses, analysis	cold	determine, determined,
appear, appears	collected	determining
		develop, developed,
application, applied	combination, combined	developing, development
		differ, difference, different
approach, approaches	common	



appropriate	compared, comparing, comparison	difficult
area, areas	completed	direct, direction, directly
around	complex	discussion
article	concerning, concerns	disease
assess, assessed, assessing, assessment	concluded, conclusion	displayed
associated, association	condition, conditions	divided
do, does, did	further	knowledge
due, during	furthermore	known
early	future	lack
easily	gain	large, largely
effect, effects	general, generally	last
effective, effectively	generated	late
effort	give	lead, leading, leads
end	good	learning
energy	great	least
enhanced	group, groups	led
ensure	half	left
environment, environmental	hand	length
especially	have	less
essential	head	level, levels
established	health, healthy	life
estimated	help	light
even	high, highly	like
evidence	hours	likely
examination, examine, examined, examining	however	limit, limited
example	human	line
exercise	ideal	linked
existing	identified, identify, identifying	literature
expected	immediately	little
experience, experienced	implications	load
explain, explained, explanation	importance, important	local
explore, explored	improve, improved, improvement, improves, improving	located, location
expressed	include, included, including	long
extent	increase, increased, increases, increasing	loss
fact	indeed	low
factor, factors	independent	made
failed	index	main
family	indicate, indicated, indicates	maintain, maintained
far	indicating	major, majority
field	individual, individuals	making

final, finally find, finding fit flow focus, focused follow form	influence information initial injury instead interaction, interactions interest	male management manner matched maximum mean, meaning, means measure, measured, measures, measuring mechanism medical, medicine
found free	internal investigate, investigated, investigating, investigation involved, involving	meet mentioned method, methods mixed result revealed right risk role, roles same sample scale screening search second see, seen seem
frequency fully function fundamental model, models month moreover movement multiple nature necessary need, needed, needs negative new next normal note, noted	issue just key possible possibly post potential power practice predict present, presented pressure previous, previously primarily, primary prior process, processes, processing produced progress promote, promoting proportion proposed provide, provided, provides, providing purpose quality question, questions race range rate, rates rather ratio reach	selected, selection self sense separate sequence series served session, sessions set, sets setting several sex shift short show, showed, showing, shown side
notion novel now number observation, observed occur, occurred, occurring, occurs often old once only order original otherwise outcome, outcomes outside		
overall	real	



paired part participant, participants particular, particularly past pattern, patterns people percentage performance, performed, performing perhaps period phase physical play, players point poor population, populations position positive status step still stored strategies, strategy strength, strong, strongly structure, structures studied, studies, study subject, subjects substantial successful sufficient suggest, suggested, suggesting, suggests support, supported, supports system, systems take, taken, taking target technique, techniques term test, tested, testing, tests then theory	received recent, recently recorded, records reduce, reduced, reducing, reduction reference reflect, reflected regard, regarding regular related, relation, relationship relative, relatively relevant remain, remained, remains repeated report represent, represents require, required, requires research, researchers respectively respond, response, responses, responsible there therefore though through throughout thus time together too tool total traditional treatment trend true type, types typically unclear understand, understanding, understood unique upper use, used, using	significant, significantly similar simply since single sites size slightly small somewhat sought source, sources space specific, specifically sports stage, stages standard standing state, stated, states useful value, values variable, variables, variation, various, varying version very view volume water way week weight well whole widely word work, working world year yet young
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APPENDIX 3

The result of non- GSL and non- AWL content word forms that appear frequently in the Physical Education and Sport Science Research Articles Corpus

Abdominal, abdominis absolute acceleration, accelerations, accelerometer, accelerometers, accelerometry acceptable, acceptance accordance, accordingly accounted accreditation, accredited acetabular acid actical actigraph actigraphy activ activate, activated, activation activpal acute acylated additionally additive adherence administered admission, admissions adolescence, adolescent, adolescents advanced adverse aerobic aforementioned ageing airway alcohol algorithm align, alignment allograft alongside alpha	amplitude anaerobic anatomical anchored anger angle, angles angular ankle anova anterior anteroposterior anthropometric anxiety appetite applicable approval are arithmetic arousal arterial, artery arthritis arthroplasty articulation, articulations artificial aseptic asthma asymmetric, asymmetry athlete, athletes, athletic, athletics atrophy attenuated audio authentic autograft autologous autonomous, autonomy	bacterial baroreflex barrier, barriers baseline basketball battery bearings been, being beep behavioral, behavioural beliefs best, better bilateral biological bivariate bland bonferroni boredom bout, bouts breakdown broader bug building built burden burnout butyrate cadence calcium calculation, calculations calculus calorie, calories campus cardiac cardiorespiratory
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altman	averaged	cardiovascular
am	axial	carotid
amongst	axis	categorical
amotivation	bachelor	causal
caution	complications	cyclists
cellular	composite, composition	database
cemented	compression	decay
centered, centres	concentrations	decelerations
centroid	concomitant	declaration
ceramic	concussion	decompression
certification, certified	conditioning	decrements
chamber	confident	deemed
characterized	confounders, confounding	defect
checklist	congestion	defenders
chest	congruent	defensive
cholesterol	conscripts	deficiency
chronic	consecutive	deficits
circulating	considered, considering	deformity
circumference	continuous, continuously	degenerative
classification, classified	contractile	dehydration
classmates	contraction, contractions	demographic, demographics
classroom	contralateral	density
clearance	cooling	dependent
clinic, clinically, clinician,	coping	depletion
clinicians		
closer	coronary	depressive
cluster	corrected, correction, correctly	deprivation
codified	correlate, correlated,	depth
	correlates, correlation,	
	correlations	
coefficient, coefficients	corticosteroid	descriptive
cognitive	cortisol	detailed
cohen	countermovement	determinants, determination
cohort, cohorts	counterparts	detrimental
collaboration	courses	developmental
collectively	covariate, covariates	diabetes
collegiate	cox	diagnosis, diagnostic
comfort	credentialed	diagram
commonly	credibility	diameter
comorbidities	cronbach	diaphyseal
comparable	crossover	diastolic
compassion	cryotherapy	didactic
competence, competencies,	cues	dietary
competency, competent		
competitions	cumulative	differences, differential,
		differently
completion	curriculum	digital

compliance	curve	directed
disabilities, disability	excessive	fluid
disagree	exercisers	fold
discourse, discourses	exert	followed, following, follows
discrepancy	exertion	footballers
dislocation	exhaustion	forearm
disruption	expended	formally
dissatisfaction, dissatisfied	expenditure	forwards
distal	experimental	foster
doctoral	expired	foundational
dose	exploration	fracture, fractures
drainage	extension, extensive, extensor	frequent
drills	extraversion	fusion
dual	extremity	futsal
dysfunction	extrinsic	gait
earlier	facemask	gate
easier	faculty	gave
eccentric	fandry	genera
ecological	fanwet	generalizability
educator, educators	fascicle	genetic
effectiveness	faster	genotype
efficacy, efficiency, efficient	fasting	ghrelin
elbow	fatigue	glucose
elderly	fatty	glycogen
electrodes	favorable	graft, grafting
elevated	feasibility	graphs
elicit, elicited	fecal	greater
eligibility, eligible	feedback	greatest
elite	feelings	grip
emergency	females	gross
encouragement	femoral	guidance
endothelial, endothelium	femur	guilt
endurance	fewer	gut
engagement	fiber, fibers, fibre, fibres	habitual
enjoyment	fig	hallux
enrolled	filter	hamstring
envisioned	firing	harassment
enzyme	fisher	harmonious
ergometer	fitbit	healthcare
eversion	fitness	height
evoked	fixation, fixator	heightened
exact	flexed, flexion	held
exception	fluency	helmet
heritability	intercept	lifestyle
heterogeneity	interestingly	ligament



higher, highest	intermittent	likelihood
hip, hips	internet	limb, limbs
hockey	interpersonal	limitation, limitations
horizontal	interrupted	linear, liner
hormone	intracellular	linguistic
hunger	intraclass	lipid
hypertension	intramedullary	lipoprotein
hypertrophy	introjected	liver
illness	invariance	loadings
imaging	invasive	locomotor
immersion	inversely	log
impaired, impairment,	inversion	logistic
impairments		
implant, implanted,	iron	longer
implants		
importantly	irrespective	longitudinal
improvements	is	looking
inactive, inactivity	isokinetic	loosening
inclusion	isometric	lower, lowest
incomplete	jogging	lumbar
incremental	junior	lymphatic
independence, independently	keywords	magnitude
indices	kinase	manuscript
indirect, indirectly	kinematic, kinematics	mar
individualized	kingdom	marathon
indoor	kit, kits	march
infected, infection	knee, knees	marker, markers
infiltration	kneeflex	mastery
inflammation, inflammatory	lab, laboratory	matrix
informal	lactate	maximal
infusion	lane	meaningful
ingestion	larger, largest	measurement, measurements
inhibitory	lasting, lastly	mechanical
injection	latency	medial
inquiry	latent	median
instructional	lateral	mediator
insulin	league	mediators
intake	learners	medication
intenders	leisure	meetings
intensities	libitum	membrane
intentions	lifelong	mentee, mentees
mentor, mentoring,	novice	passion
mentors, mentorship		
mesh	null	patella, patellar
metabolic, metabolism	numbers	patellofemoral

metastases	numerous	pathway, pathways
microbiota	nursing	peer, peers
mid	nutritional	pelvic, pelvis
mild	obese, obesity	perceptual
million	oblique	perfectionism, perfectionistic
mitochondrial	observational, observations	periarticular
mobility	obsessive	peripheral
modality	offensive	periprosthetic
modeling	offered, offers	pessimism
moderate, moderately	older	phenotypic
modular	onset	physician, physicians
molecular	opponent	physiological, physiology
mom	optimal	pinnacle
months	optimism	pitch
mood	organizational	placed, placement
morbidity	orthopaedic	planned, planning
mortality	osteoarthritis, osteotomy	plasma
motherhood	others	plateau
motivational	outdoor	platform
motor	outlined	plausible
multilevel	overgrowth	plot, plots
multivariable, multivariate	overnight	points
muscle, muscles, muscular	overweight	polar
musculoskeletal	owing	polyethylene
myocardial	ownership	pooled
nail, nailing, nails	oxidative	poorer, poorly
namely	oxycon	portable
narrative	oxygen	positional, positioned
navigate	pace	possession
nerve	pairwise	posterior
neural	pal	postexercise
neurogenesis	palpation	postprandial
neuromuscular	pants	postprofessional
neurons	pared	posttest
neuroticism	parental, parents	posture
newly	partial, partially	postworkshop
nonpros	partly	preceptor, preceptors
nonunion, nonunions	parts	predictive, predictor,
		predictors
preference	ratings	robust
preparation, preparatory	rationale	rotation, rotations
preparticipation	raw	routine
preschool	reactivity	rugby
prescription	readiness	rumination
preseason	reading	runner, runners



prevalence, preventable, prevention pride primed, primes priori probability problematic, problems profession, professions proficiency profile, profiles programming progressed, progression, progressive, progressively proliferation prolonged prominent pronounced proof proprietary pros prosthesis, prosthetic protective provider, providers proximal pulmonary pump purposeful quadriceps quantified, quantify, quantitative, quantity questionnaire, questionnaires radial radiograph, radiographic, radiographs, radiological radius randomised, randomized rapid, rapidly rater sitfit situational skeletal ski slope	reaming rearfoot reasoning receptor, receptors recessive reciprocal recognition recordings recreational recruited, recruitment rectal recurrence redisplacement reflection, reflective regardless registry regression regularly rehabilitation relatedness renal repetition, repetitions replacement replicated reported, reporting, reports reproducibility residual resistance respective respiratory resulted, resulting, results retest retrospective riders submaximal subsample subscale, subscales substantially successfully	rupture sagittal said, saying saliva samples, sampling satisfaction, satisfactory saturation schools sciences scripts secondary secretion sectional sedative sedentary segment semester sensitive, sensitivity sensor, sensory separately serum settings severe, severity shaft shame shod shortening, shorter shuttle sided sig signaling, signaling, signals signed signified simulations, simultaneously times, timing tissue, tissues toe tolerance torque
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slower	superior	towards
smaller	supervised, supervision	trained, trainer,
		trainers, training
soccer	supine	trait
socialization	supportive	traits
soleus	surgeon, surgeons,	transcripts
	surgery, surgical	
soreness	surrogate, surrogates	transient
spectrum	sweat	translate
spinal, spine	swimmers	transversus
split	sympathetic	trauma, traumatic
spondylolisthesis	syndrome	treadmill
sporting	synergies	trials
sprint, sprinting, sprints	synovial	triangulation
squared	synthesis	triaxial
squat	systematic, systemic	triceps
stair, stairs	systolic	trivial
stance	tactical, tactics	trunk
standardized, standardized,	tag	turnover
standards		
static	tangible	tut
stationary	taper	tutor, tutors
steady	temporal	tween
stem	temptations	twin
stepping	tendency	twitch
stereotype	tendon	ultrasound
stiffness	tenure	umpires
stimulation, stimuli, stimulus	terms	uncemented
storage	therapeutic	unchanged
strain	therapy	underestimation
strengths	thereafter	undergraduate
strenuous	thickness	unilateral
strivings	thigh	united
stroke	things	univariate
stronger	thoughts	unknown
stroop	threshold, thresholds	unlikely
subgroup	tibia, tibial	unshod
subjective	tilt	upright
uptake	vertical	weekly, weeks
urine	veteran, veterans	weighted
valence	viewed, viewing	western
valgus	vigorous	whilst
valuable	vitamin	width
vascular	volitional	willing, willingness
vasodilatation	waist	workload



vein velocities, velocity venous ventricular verbal versus	wanted warranted was, were washout ways web	workshop worldwide wrist years younger zone, zones
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