



# TOPICS IN EXERCISE SCIENCE AND KINESIOLOGY

*Expedited Article*

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## Sources of Information that Introduced Exercise Science Students to their Major

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### ABSTRACT

*Topics in Exercise Science and Kinesiology Volume 3: Issue 1, Article 3, 2022.* This study examined the most influential sources of information that first introduced exercise science undergraduate students to their current major and sought to determine if any differences existed between demographic variables. An electronic questionnaire ranking the level of influence of 27 potential sources of information was completed by 131 exercise science students at a regional, midwestern university. Personal experience with the major, health care professionals in the major, and friend or family member in the major were among the highest non-college related sources, while college introductory courses and college instructors in the major were reported as the most influential college-related sources. The most influential sources of information remained consistent between the demographic variables of gender, age, academic rank, hometown population, and racial/ethnic background. These findings can be used to help institutions and kinesiology and exercise science programs to create or modify recruiting campaigns and marketing materials to be both more effective and more informative for prospective students. Ensuring that students have accurate information on which to base their major selection decisions on can allow them to make a more informed major selection earlier in their academic career, potentially increasing satisfaction and minimizing the need to extend the time to graduation.

**KEY WORDS:** Exercise science, kinesiology, major selection, academic major, undergraduate students, allied health, applied health

### INTRODUCTION

For those students who choose to attend college, the decisions of which college to attend and which major to select can be daunting. While some students may enter college with highly developed professional and career goals, as well as well-developed understandings of how to achieve such aims, others may not select their path or major until later in their academic career. The influencing factors contributing to major selection is believed to have an impact on student success and length of time to degree completion, as well as recruitment and retention approaches (11, 20). Despite the importance of this decision, it has been questioned whether students use sound decision-making strategies when selecting their major and if they truly

understand the major, career, and professional opportunities associated with their selection (7, 15).

The need for informed decision making is essential for students in all academic majors, however for students pursuing allied health professions, this becomes critically important given the variety of options available to them. Physical therapy, occupational therapy, athletic training, exercise physiology, physician assistant, and kinesiotherapy are among those careers listed as allied health professions by the Association of Schools for Allied Health Professions (2). Most of these allied health professions require post-baccalaureate education but do not have one designated, or even preferred, undergraduate major. While some institutions offer specific pre-professional majors, such as pre-physical therapy, many students have the freedom to pursue any academic major as long as they fulfill the required prerequisites for graduate school. Academic majors such as kinesiology and exercise science have become popular choices among undergraduate students pursuing these careers (6, 19); however, inadequate information or misconceptions about allied health fields or the academic major can negatively influence student recruitment, satisfaction, and retention in these majors (5, 15). Prior to declaring their major, students should not only evaluate the curriculum requirements, but those pursuing allied health careers must also be aware of the requirements for post-baccalaureate programs including prerequisite classes, shadowing/observation or clinical hours, and even GPA requirements. Given the competitive admissions process to these allied health programs, students should also be aware of acceptance rates in these fields and be prepared to pursue an alternate career in kinesiology or exercise science should they not be admitted (9).

Research on undergraduate college major selection from all fields broadly falls into one of two categories: factors or predictors of major selection and demographic characteristics and choice of major (7, 15, 18). Factors that have been found to be influential vary across disciplines but it has been argued that many of these factors are, or can be, studied as mutually exclusive including demographic characteristics, academic ability, family influence, social factors, political affiliations, academic self-concept, and student personality (15). Additionally, much of the literature that has explored major selection has been based on either decision making or career choice theories, as there are no existing theories associated with major selection (17).

While numerous factors have been identified, the names of the factors and the perspective from which they are examined vary from study to study. As a result, Beggs, Bantham, and Taylor narrowed the factors from previous literature into four distinct categories: (a) sources of information and influence, (b) job characteristics, (c) fit and interest in subject, and (d) characteristic of the major/degree (7). After their own additional qualitative research, they added two additional categories of (e) financial considerations and (f) psycho/social benefits (7). Studies on major selection choice often include questions pertaining to factors from each of these six categories, however Beggs et al. argued that including questions about sources of information at the same time as other influencing or motivating factors may be confusing for students as they may not be able to distinguish the influential nature of the factor itself from the method of learning about it. For example, they found that both fit and interest in subject and job characteristics were ranked as highly influential but the category of sources of information was

least influential. The authors questioned where the information about the job characteristics and interest of subject came from if the actual sources of that information were least valuable. As a result, they suggested that future studies separate out the sources of information from the influencing factors themselves (7).

To date, only one study has been located that specifically investigated the initial source of contact, which studied students in six allied health majors (medical technologist, dental hygienist, occupational therapist, physician assistant, physical therapist, and respiratory therapist) (3). Results from this study indicated that high school counselors were an initial source of information for physical therapy and dental hygiene students; health professionals in the field were influential for dental hygiene, occupational therapy, physical therapy, and physician assistant; and medical technologists and respiratory therapists were not influenced by any sources of information (3). Given the advances in technology since this 2003 study, it can be assumed that students have broader access to information on both academic majors and specific careers. Additionally, education requirements for allied health professions have changed in the past two decades, often requiring students to pursue graduate or professional education, which simultaneously allows the student more freedom in selecting their undergraduate major while also increasing undergraduate academic requirements (9).

As such, a current examination of sources of influential information applicable to today's students is warranted and will add to the literature by identifying where exercise science students are first learning about their major and which of those sources of information are most influential. Understanding the sources that initially introduced students to their eventual major can allow institutions and academic programs to create or modify recruiting campaigns and marketing materials so that students may base their major selection decisions on sound information, thus allowing students to select majors early on that are a good fit, thereby increasing satisfaction and minimizing the need to extend the time to graduation. Therefore, the purposes of this study were to identify which sources of information were most influential in introducing exercise science students to their major and to determine if any differences of influence exist among the demographic variables of gender, age (traditional vs non-traditional student), year in school, rural/urban hometowns, and racial/ethnic backgrounds.

## **METHODS**

### ***Participants***

Undergraduate exercise science students from a mid-sized, regional university in the Midwest were invited to participate in this study as part of a larger research project by the lead author examining influential sources of information among all undergraduate students in the university's Department of Applied Health. Census, or total population sampling, is considered an acceptable approach when the costs and associated resources are fixed and would not substantially vary with the increased sample size (12). Therefore, a total population sampling technique was utilized due to the small population size of the exercise science major (n=162). Program and department administrators granted approval for the exercise science students to be recruited via email. Criteria for inclusion was being declared as an exercise science major at

this institution and having access to the internet to complete a short survey. Participants who failed to complete the survey were excluded from the study. This study was classified as exempt from the Institutional Review Board of the primary author's university. Informed consent was obtained electronically by each participant prior to beginning the survey. This research was carried out fully in accordance to the ethical standards of the International Journal of Exercise Science (14).

### ***Protocol***

Existing surveys on the factors that influenced major selection were found in the literature, however these surveys included both influencing and motivating factors in addition to potential sources of information. Therefore, a new instrument was developed in three stages to ensure face and content validity. Sources of information found to be influential in the literature were carefully reviewed and added to a set of 9 demographic and major related questions. A panel review comprised of applied health faculty and an academic advisor participated in the review and modification of the instrument and seven more sources of information were added. A second group of faculty participated in a follow-up analysis of each question and source of information to further ensure clarity and readability. After piloting the survey on 10 applied health graduate students, the organization and layout of the electronic survey was changed, however, there were no actual changes to the instrument items.

The final 36-item instrument included nine demographic and major related questions and 27 sources of information items. The questionnaire was created and distributed through Qualtrics (Qualtrics, Provo, UT). Demographic questions included gender (female, male, transgender female, transgender male, other), academic rank, rural/urban hometown populations, race (African American, Latinx/Hispanic, Asian, Caucasian, other), as well as four major-related questions. The sources of information were presented in list format and categorized in the survey as either college- or non-college related source of information. Participants were asked to rank the level of influence from 1 (no influence) to 4 (great influence) for each listed source of information.

Recruitment emails with a link to the electronic survey were sent directly to all declared exercise science students. Follow-up reminder emails were sent after 3 days, 1 week, and 2 weeks with a total data collection window of three weeks. This survey did not collect any personal identifying information; however, an automatically generated random identifier was assigned to each participant to monitor participation rates and to prevent duplicate survey submissions. All responses were collected, stored, and monitored through the Qualtrics software program throughout the data collection timeframe.

### ***Statistical Analyses***

Following data collection, the data were exported from Qualtrics into IBM SPSS (IBM Statistics v24, Armonk, NY) for analysis. Descriptive statistics were reported as frequency and percentage to describe the sample. Frequency distributions and counts were conducted for each potential source of information overall and according to the demographic variables of gender and race.

To test for significance of gender and race, the non-parametric tests of Mann-Whitney U and Kruskal Wallis tests were used with an alpha level of 0.05 for statistical significance.

**RESULTS**

A total of 162 exercise science students were invited to participate in this study. Surveys were completed by 131 students for an 81% response rate. Demographic summary statistics are presented in Table 1. Most respondents (90%) were traditional age (18-24 years), female (62.5%), and Caucasian (78.6%). Over half of the students (60.3%) reported their hometown population as an urban cluster with a population size between 2,500-50,00. The majority of responding participants were either juniors (30.5%) or seniors (48.8%).

**Table 1.** Demographic summary statistics for Exercise Science undergraduate majors (N = 131).

Demographic Characteristic	N (%)
Gender	
Male	49 (37.4)
Female	82 (62.5)
Transgender	0 (0)
Total	131 (100)
Age Range	
Traditional (18-24 years)	118 (90.0)
Non-traditional (25 +)	13 (10)
Total	131 (100)
Racial/Ethnic Background	
African American	15 (11.4)
Latinx/Hispanic	4 (3.1)
Asian	4 (3.1)
Caucasian	103 (78.6)
Other	5 (3.8)
Total	131 (100)
Hometown Population	
Less than 2,500	28 (21.3)
Between 2,500 and 50,000	79 (60.3)
Over 50,000	21 (16.0)
Unknown	3 (2.2)
Total	131 (100)
Academic Rank	
Freshman	3 (2.2)
Sophomore	11 (8.3)
Junior	40 (30.5)
Senior	64 (48.8)
5+ years Senior	13 (10)
Total	131 (100)

When asked when they selected their major, 34% of students reported that they decided their major before or during high school, while 52% decided during either their freshman or

sophomore year. Approximately half (51.1%) of exercise science students reported that their current major is their first and only major declared at their institution, while 32% transferred from another major into exercise science.

Frequencies of level of influence for non-college related sources of information represented in Tables 2. Personal experience with the major or field of study was reported to be the most influential (either moderate or great influence) non-college related source of information by 59% of the responding exercise science majors, followed by a health professional in the major or field (40.5%), a friend or family (39.7%), and independent research (34.6%).

**Table 2.** Level of influence for non-college related sources of information for Exercise Science undergraduate majors (N=131).

Source	<u>No Influence</u>	<u>Some Influence</u>	<u>Moderate or Great Influence</u>
	N (%)	N (%)	N (%)
High School Advisor or Counselor	101 (77.1%)	12 (9.2%)	18 (13.7%)
High School Class or Teacher	86 (65.6%)	24 (18.3%)	21 (16.0%)
College or Career Fair hosted at High School	96 (73.3%)	18 (13.7%)	17 (13.0%)
Career Aptitude Test taken in high school or taken on own	88 (67.2%)	32 (24.4%)	11 (8.4%)
Friend or Family Member who is a Health Professional in your Major/Field of Study	52 (39.7%)	27 (20.6%)	52 (39.7%)
Health Professional in your Major/Field of Study who is NOT a friend or family member (i.e., shadowing experience during high school)	49 (37.4%)	29 (22.1%)	53 (40.5%)
Personal Experience with the Major/Field of Study (i.e., as a patient or accompanying someone else as a patient)	26 (19.8%)	28 (21.4%)	77 (58.8%)
Parent (Non-health related professional)	63 (48.1%)	34 (26.0%)	34 (26.0%)
Military Recruiter/Military Career Counselor	120 (92.3%)	6 (4.6%)	4 (3.1%)
General Independent Career/Major Research	60 (46.2%)	25 (19.2%)	45 (34.6%)
Work or employment	77 (58.8%)	25 (19.1%)	29 (22.1%)
Attendance at a professional conference	107 (81.7%)	12 (9.2%)	12 (9.2%)
Other	94 (77.0%)	9 (7.4%)	19 (15.6%)

Table 3 represents the influence of college related sources from student’s current institution. Participants reported introductory college course in the major to be most (moderate or great influence) influential (46.6%), followed by college instructor in major (43.5%), a student in the major (36.6%), and SIUE website (34.4%). For those students who had previously attended another college, the most influential sources (moderate or great influence) of information were online materials/website from their previous school (26.9%), followed by admissions counselor/academic advisor from PAC (21.2%), and introductory college course in/about major at PAC (19.2%).

When influential sources of information were examined by gender, academic rank, hometown population, racial background, and age, similar trends were revealed as with the overall exercise science students results. Personal experience, friend or family member in the profession, introductory college course in the major and college instructor within the major remained the

most influential across all groups. While the overall most influential sources of information remained consistent across groups, non-parametric testing using Kruskal-Wallis and Mann-Whitney U tests did reveal some statistically significant differences within the groups on various sources.

**Table 3.** Level of influence for college related sources of information for Exercise Science undergraduate majors (N=131).

Source	<u>No Influence</u>	<u>Some Influence</u>	<u>Moderate or Great Influence</u>
	N (%)	N (%)	N (%)
SIUE Website	50 (38.2%)	36 (27.5%)	45 (34.4%)
SIUE Social Media (i.e., Twitter, Instagram)	102 (77.9%)	20 (15.3%)	9 (6.9%)
SIUE Admissions Counselor	73 (55.7%)	30 (22.9%)	28 (21.4%)
SIUE General Academic Advisor	49 (37.4%)	37 (28.2%)	45 (34.4%)
SIUE Information or Recruiting Event (In-Person)	96 (73.3%)	18 (13.7%)	17 (13.0%)
SIUE Career Development Center	99 (75.6%)	17 (13.0%)	15 (11.5%)
Major-Specific Promotional Print Materials (i.e., brochures, posters on campus)	85 (64.9%)	27 (20.6%)	19 (14.5%)
Major-Specific "Swag" (i.e., t-shirts, water bottles)	96 (73.3%)	20 (15.3%)	15 (11.5%)
Introductory College Course in/about Major	36 (27.5%)	34 (26.0%)	61 (46.6%)
College Course outside of the Major	73 (55.7%)	38 (29.0%)	20 (15.3%)
College Instructor in the Major (not associated with a course)	48 (36.6%)	26 (19.8%)	57 (43.5%)
College Instructor outside of the Major (not associated with a course)	89 (67.9%)	25 (19.1%)	17 (13.0%)
Student in the Major (i.e., friend, coworker)	49 (37.4%)	34 (26.0%)	48 (36.6%)
Career Aptitude Test taken as part of a class at SIUE or through the Career Development Center	107 (81.7%)	12 (9.2%)	12 (9.2%)
Education/Promotion/Awareness Table or Event on campus by the Major or Student Organization	98 (74.8%)	21 (16.0%)	12 (9.2%)
Other SIUE related Source	119 (90.8%)	4 (3.1%)	8 (6.1%)

A Mann-Whitney U test was conducted to determine if there were differences in levels of influence for any of the sources of information based on gender: "male" (n = 49), "female" (n = 82). Distributions for sources of information were similar for both groups as assessed by visual inspection of each of the boxplots. Levels of influence were statistically significant higher in females for both the career aptitude test (mean rank = 71.01),  $U = 2419.5$ ,  $z = 2.365$ ,  $p = .018$  and personal experience with the major/field of study (mean rank 81.48),  $U = 1,637$ ,  $z = -2.004$ ,  $p = .045$ .

A Kruskal-Wallis test was conducted to determine if there were any differences in levels of influence for any of the sources of information based on reported race: "African American" (n = 15), "Latinx/Hispanic" (n = 4), "Asian" (n = 4), "Caucasian" (n = 103), "other" (n = 5). Distributions were not similar for all groups as assessed by visual inspection of each of the boxplots. Levels of influence were statistically significantly different for college or career fair,  $X^2(4) = 12.196$ ,  $p = .016$ ; military recruiter/military career counselor,  $X^2(4) = 11.048$ ,  $p = .026$ ; college admission counselors,  $X^2(4) = 11.616$ ,  $p = .020$ ; and college instructor in major,  $X^2(4) = 12.591$ ,  $p = .013$ . Subsequent pairwise comparisons were performed using Dunn's (1964)

procedure. A Bonferroni correction for multiple comparisons was made with statistical significance accepted at the  $p < .005$  level. This post hoc analysis did not reveal any statistically significant differences between any group combination.

Kruskal-Wallis tests were also run to identify any possible differences in levels of influence based on hometown population size and academic rank. Distributions were not similar for all groups as assessed by visual inspection of each of the boxplots. Analysis did not reveal any differences based on hometown population size for any source. Levels of influence by academic rank were statistically significantly different for career aptitude tests,  $X^2(4) = 14.840$ ,  $p = .005$ ; personal experience with the major,  $X^2(4) = 10.137$ ,  $p = .038$ ; major specific swag,  $X^2(4) = 10.892$ ,  $p = .028$ ; college course outside of the major,  $X^2(4) = 9.63$ ,  $p = .046$ ; and student in the major,  $X^2(4) = 11.532$ ,  $p = .021$ . A post hoc analysis of pairwise comparisons using Dunn's (1964) did not reveal any statistically significant differences between any academic rank group combination.

## DISCUSSION

Previous studies conducted on influential factors associated with college major selection generally failed to distinguish the motivating or influential factor from the source of that information. Beggs et al. argued that when studying these factors together, it may be difficult for students to distinguish between where they got their information from why they made their decision (7). Therefore, this study examined only potential sources of information that were influential in introducing exercise science undergraduate students to their major.

Approximately one-third ( $n=45$ ) of exercise science students in this study reported selecting their major before or during high school. Despite this, high school related sources such as a high school advisor, high school class or teacher were among the least influential in introducing students to their major, which is consistent with previous studies (1, 8, 13, 17, 18). Instead of learning about their major from high school related activities, students in this study reported sources of information that provided personal exposure to the major or field to be most influential. Exposure in this context includes knowing someone in the field or academic program of study, experience with the field as a patient, or exposure to the field through the experiences of a friend or family member as a patient (10). Exercise science students in this study reported personal experience with the field and health professionals in the major or field to be the most influential sources of information. While the current study examined sources of information that introduced students to their academic major and not specifically their intended professional career, these findings support the argument made by Barfield et al. and Byrne that both personal and professional experiences with allied health care professionals remain an important source of information to introduce students to allied health care professions and majors (4, 10). Given this level of influence, program administrators should consider how they can partner with allied health care professionals, as well as professional organizations, to ensure the most accurate and up to date information is being communicated.



Among the college-related sources of information, introductory college courses and college instructors in the major were reported to be influential among exercise science students. The purposes of introductory college courses are numerous and vary among programs and institutions. For example, exercise science students at the institution where data was collected are required to take an introductory course designed to explore career opportunities within the major while other institutions may have introductory courses that serve primarily as an introduction to discipline-specific content. Regardless of the type of course, program administrators and faculty should understand the potential these introductory courses and their associated faculty have on increasing awareness or understanding of their majors and potential career opportunities within the field.

In addition to examining those sources that were reported as influential, it is important to evaluate the sources that were reported to have none or only limited influence. Given that approximately 60% of students reported selecting their major while in college, program administrators interested in increasing enrollment rates should carefully examine not only where students are learning about their major, but also where they are not in order that students can make informed decisions on how to allocate their resources. For example, 66% and 93% of exercise science students reported the institution's website or social media accounts, respectively, as having none or only some influence. Additionally, admissions counselors (79%) and general academic advisors (65%) were also reported to have none or only some influence as a source of information introducing students to their academic major. It is not known if students simply didn't look to these sources for information or if the sources themselves did not provide adequate information, but careful reflection by administrators on the assumptions associated with these potential sources seems warranted.

Most allied health care careers requiring post-baccalaureate education do not have one specific undergraduate major requirement; however, kinesiology and exercise science majors have become a popular selection among students pursuing these careers (6, 19). When several academic majors are viable options to pursue the same allied health care profession, students must be able to acquire practical and reliable information to help them make their major selection. The findings of this study indicate that exposure to the profession or to health care professionals in the field, along with introductory courses in the major tend to be the most influential sources of information. Therefore, program faculty and administrators should explore how these influences can impact student recruitment, satisfaction and retention. Ensuring that health care professionals in relevant allied health fields are able to adequately discuss academic major options and that introductory courses include substantial major and career exploration will allow students the ability to confidently make their academic major selection based on the most current and applicable information.

While identifying the sources of information is important in order to create strategies to ensure that they are getting the correct information from these sources, realizing which sources are not influential is equally important. High school counselors and teachers, college recruitment fairs, college admissions representatives, and college websites and social media sites were reported to have minimal influence in introducing students to their major. Therefore, program

administrators should examine both the current resources being spent on these sources, as well as the reliance of their assumed impact to assess both the current and potential effectiveness of these sources at their own institution. The findings of this study can help program administrators of undergraduate kinesiology and exercise science programs to create or modify recruiting and marketing campaigns that could help increase enrollment and retention, while simultaneously ensuring that students are basing their major selection decisions on the most accurate and up-to-date information. This, in turn, has the potential to improve student satisfaction, success, and time to graduation which, given the post-graduate education requirements of allied health care careers, can save students both time and money.

This study had several limitations that warrant consideration. First, this study was conducted at only one public, regional institution in the Midwest with exercise science majors. This limits the generalizability of the results, as they may not be applicable to students in other academic programs or at institutions in other regions or of different sizes. Additionally, there were uneven demographic distributions among survey participants in the areas of gender (63% female), age range (90% age 18-24), and racial/ethnic background (78% Caucasian) which also limits generalizability. Also important to note is that undergraduate students at the institution where data was collected do not declare their major upon matriculation. For institutions where students must enter with a declared major, some sources of information may not be applicable. Additionally, this study asked students to rank the level of influence of each source independently, it did not ask students to compare the level of influence between the sources. While the study successfully identified how influential each source was, it cannot identify how they compare to one another independently.

Given the unique characteristics of kinesiology and the related academic majors such as exercise science, future research should include all kinesiology subdisciplines and should span multiple institutions. Additionally, it is recommended that the sources of information be ranked from most to least influential in order that a more accurate representation of influence can be determined. Lastly, a mixed-method approach with follow up interviews would be beneficial to ensure students are identifying those sources that introduced them to their major and not those that motivated them to select their major. Follow up interviews would also allow the researcher to ask questions that would allow for better understanding of when and where the student would have liked to receive information or where they may have come across inaccurate or false information.

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### PURPOSE

The purposes of this study were to identify which sources of information were most influential in introducing exercise science students to their major and to determine if any differences of influence exist among the demographic variables of gender, age (traditional vs non-traditional student), year in school, rural/urban hometowns, and racial/ethnic backgrounds.

### MAIN RESULTS

Undergraduate exercise science students (n=131) in this study reported the level of influence a variety of college and non-college related sources of information had on selecting their major.

- Personal experience with the major or field of study was reported to be the most influential (either moderate or great influence) non-college related source of information by 59% of the responding exercise science majors, followed by a health professional in the major or field (40.5%), a friend or family (39.7%), and independent research (34.6%).
- Participants reported introductory college course in the major to be most (moderate or great influence) influential (46.6%), followed by college instructor in major (43.5%), a student in the major (36.6%), and SIUE website (34.4%).
- High school counselors and teachers, college recruitment fairs, college admissions representatives, and college websites and social media sites were reported to have minimal influence in introducing students to their major.
- When asked when they selected their major, 34% of students reported that they decided their major before or during high school, while 52% decided during either their freshman or sophomore year.

In light of these results, it is suggested that program administrators examine both the current resources being spent on these sources, as well as the reliance of their assumed impact to assess both the current and potential effectiveness of these sources at their own institution. These findings can help program administrators create or modify recruiting and marketing campaigns that could help increase enrollment and retention, while simultaneously ensuring that students are basing their major selection decisions on the most accurate and up-to-date information. This, in turn, has the potential to improve student satisfaction, success, and time to graduation which, given the post-graduate education requirements of allied health care careers, can save students both time and money.