Prior to describing the specifics of the research process I employed to write my paper for a graduate course in advanced measurements in health care, it is pertinent to briefly describe the context of the assignment. The purpose of this research assignment was to select a clinically relevant construct/concept that could be measured with both a self-report and physiological instrument. Once the instruments were identified, we critically evaluated each instrument based on their validity, reliability, sensitivity and specificity in measuring the operationalized concept/s. This required us to not only procure a wide array of scientific articles, but to integrate and synthesize the findings from these articles to identify how the two instruments complemented each other to provide important empirical information on the topic of interest. My research topic was selected to be in line with my dissertation work and assessed a physiological and a self-report instrument to measure ‘fatigue’ in older adults.

I began the research process by using Ovid-MEDLINE, PubMed and Google Scholar to obtain literature reviews and key historical papers on the broad concept of ‘fatigue’. Literature reviews and classic historical papers are typically written by leading scientific investigators in the field and provide a valuable resource to identify more contemporary manuscripts and to obtain a comprehensive personal library on the topic. In addition, I am fortunate to be working under the tutelage of two leaders in fatigue research, Dr. Sandra Hunter and Dr. Robert Fitts, that study the physiological mechanisms of the fatigue process within the entire neuromuscular system and within a single muscle cell. In addition to my own literature searches, these mentors provided me with numerous key articles from their personal libraries.

Once I obtained 10 to 20 systematic reviews, meta-analyses and classic articles, I acquired additional sources by cross referencing these manuscripts and using Web of Science and Google Scholar to view all of the manuscripts that had cited these original articles. At this stage in the research process, I was not very selective about the articles I retrieved because 1) I felt it was better to be overly inclusive rather than miss seminal research articles early on in the literature review, and 2) Marquette’s online periodical databases and interlibrary loan system makes acquiring electronic files both easy and fast. The criteria for inclusion was based on
whether the title of the manuscript appeared to superficially be related to my research topic and was published in a peer-reviewed journal. This process allowed me to identify key investigators and laboratories around the world that specialize in studying fatigue. I then used this information to search by authors rather than topics and keywords to help assure that I had been thorough in reviewing the primary literature.

The point at which to transition from spending a majority of the time generating a list of references to spending more time reading and critically evaluating the quality of the research is ambiguous and can be overwhelming due to the wealth of literature that is available. Nonetheless, once I felt I had a comprehensive electronic library of initial references, I began reading the abstracts and sorting the references into folders based on their relevance to the goal of my paper. This reduced the number of references to a more manageable amount at which point I began meticulously reading through the articles, and critiquing them based on the quality of the work. This portion of the research process is both challenging and time-consuming, and I learned that it is essential to take notes in a systematic manner before beginning the writing process. My approach was to create an annotated bibliography that included the citation, the key conclusions of the article, a brief statement on the relevance to my paper, and a few strengths and weaknesses that I had identified about the study. I also learned that I am personally better at remembering a study if I print a hard copy and write notes throughout as I am critiquing the article. The process of critiquing articles and taking notes was important to not only help organize my thoughts but to identify other references to fill the gaps in my initial literature searches. As I continued to read and the notes accumulated, ideas for the outline of my paper and the key points I wanted to make began to form. At this point, I began writing the paper, citing the references as I wrote. The in text citations and bibliography were APA formatted based specifically on the format used by a physiological journal that I aspire to one day publish in.

The research process is both time consuming and challenging, and at numerous stages it is tempting to take short cuts or want to procrastinate. Falling into these temptations, however, only makes the research and writing process more difficult and frustrating later on. I have learned that setting a dedicated reading and writing schedule helps to make the research process not only more enjoyable but to improve the quality of the end product as well. The ability to articulate and disseminate your research ideas in writing is important for numerous careers, takes considerable dedication and practice, and is a lifelong skill that all individuals can improve on.