

Reflective Paper

Following completion of my research proposal, I proceeded to implement the research project by creating a survey using Microsoft Forms. The programme was user-friendly and easy to navigate. The platform allowed me to create a survey which included different answer structures for various questions, such as Likert/Ranking/Rating scales. When reviewing the literature, it became clear that the existing body of research in my chosen area is limited and inconclusive. This made it difficult to determine the most relevant and appropriate questions to include in the survey. Given the limited research in this area, I was unable to find a standardised questionnaire that aligned to my specific research objectives. Many of the studies I reviewed predominantly used methods such as food diaries and food frequency questionnaires (FFQ) and subsequently analysed participants' carbohydrate content. Given the time constraints of this research project, this would not have been feasible, and it was more practical and pragmatic to conduct a survey questionnaire. Conducting a comprehensive analysis of food diaries would require a larger timeframe and would be better suited for a larger research project such as a dissertation. However, I do believe that the survey design used was appropriate for answering the research question in this case.

I was conscious that creating a survey that was too long and/or tedious, would discourage participation and ultimately reduce the overall response rate. The survey contained 14 questions, most of which were multiple choice. Four questions required participants to provide a short-written response. One of the questions asked participants 'What is your understanding/knowledge of the recommended carbohydrate intake guidelines for endurance athletes? Please specify any information you're aware of'. On reflection, I could have been more strategic with this line of questioning in the survey's design. For example, a potential improvement could have been to highlight the recommended carbohydrate guidelines for endurance activities and then asking participants to choose the correct answer from a list of potential answers. While this could have enhanced the specificity and relevance of the information gathered, the potential pitfalls must be acknowledged. There was a risk that participants might consult online resources to find the correct answers, compromising the reliability of the responses and skewing the data collected. Only around four answers included some form of recommendations. Most responses just mentioned what the individual does during training/racing. On reflection, I suppose the question could have been split into two i.e. 'Are you aware of the recommended carbohydrate intake guidelines for endurance athletes?' which would have required a 'Yes' or 'No' answer. This question could have been followed by 'Which specific guidelines/recommendations are you aware of?'. This would have allowed increased specificity in answers. Another potential improvement to the survey would have been to ask participants for anthropometric measurements including their weight. Along with questions on their typical pre-workout fuelling strategy, their carbohydrate intake could have been analysed and compared to recommended guidelines. For example, the American College Sports Medicine, recommend 6-10g/kg of body weight for endurance training (i.e. 1-3 hours a day of moderate-high intensity exercise) and 1-4g/kg of body weight 1-4 hours prior to an activity lasting >60 minutes. However, this again would have required additional time to analyse following survey completion. Furthermore, there is an ethical element to consider with asking participants to provide their weight/weight history. Given that

the survey involves questions on exercise and nutrition, weight can be a sensitive topic for some individuals, particularly if there is a history of disordered eating/clinical eating disorder. Some participants may also be unaware of their weight or unhappy to disclose this information. If this type of information gathering is to be included in my future dissertation, I need to consider including exclusion criteria for those with a history of clinical eating disorders. It may also be beneficial to explain to participants the reason why we are asking for their weight history i.e. to estimate their carbohydrate intake vs carbohydrate recommendations for endurance athletes.

On reflection, despite it being a short questionnaire, I should have considered implementing a pilot study. This would help identify and rectify any potential human errors such as typographical mistakes or issues related to the estimated time for completion and the overall flow of the survey. For example, when analysing the responses, I noticed that one question: 'To what extent do you believe carbohydrate intake affects your performance?' had multiple responses. Upon further analysis, I realised that the answer format required participants to rank their answers, which included 'Strongly agree' to 'Strongly disagree', rather than just picking one answer. When analysing the results, I used the top-ranked answer, however I realise this answer format may have caused some confusion for some participants. Conducting a preliminary testing phase would have highlighted this and provided valuable insights that could enhance the overall quality of the survey. In addition, it would inform the estimated completion time for participants, which could be included in the participant information sheet. Ultimately, the insights gained from a pilot study could have led to a more robust and effective data collection tool.

Once the survey was designed, it was sent to friends and associates for completion. The first part of the survey included a section with information on the purpose of the research, the expectations of participation and how the data would be used. The section also emphasised that participants had the right to withdraw from the survey at any point without needing to provide a reason. Participants were finally asked for their consent before proceeding with the survey. Inclusion of this participant information section was important to ensure the project met the required standards of the University of Wales St David's ethics committee.

The survey was completed by a total of 10 individuals, a response rate that I initially found surprising given my expectations during the research design phase. At that time, I was optimistic about gathering a larger pool of responses, projecting that I would receive approximately 25 to 30 completed surveys. This estimate was largely based on my social connections and the sporting community network I am a part of. I am part of a WhatsApp triathlon group chat that includes 28 female members, all of whom actively participate in triathlon events or engage in individual sports such as running, cycling, and swimming. I had also reached out to another associate who is part of a different triathlon club, asking if they could circulate the survey among the female members of their triathlon group. I took care to send a message that clearly explained the purpose of the survey and naïvely assumed that most female members would complete the survey. However, upon reflecting on the response rate, I realize that my initial approach may have been overly optimistic. In hindsight, it would have been beneficial to send a follow-up message a few days after the initial message to gently remind potential participants about the survey to encourage engagement. This lack of reminders could have contributed to the lower-than-

expected response rate, and I now understand the importance of having a more strategic plan in place for participant follow-ups for my future dissertation. Furthermore, I need to consider consulting with a wider circle of potential participants using social media. As I prepare for my dissertation, it has become increasingly clear that I also need to set realistic expectations regarding the number of participants likely to complete a survey, particularly when some questions require more a detailed and thoughtful response.

The results contained a mixture of quantitative and qualitative answers, providing a more comprehensive view of participants knowledge and attitudes. I spent some time familiarising myself with the data and looking at the overall response to see if I could identify any immediate patterns or trends. The demographic analysis revealed that most participants were aged between 25-34 ($n=4$), followed by 45-54 ($n=3$). No participants were aged 34-45. Given the small sample size of only 10 participants, it was challenging to compare results and draw any conclusions based on variables such as age, length/type of training, due to the limited number of participants in each group. For my future dissertation, it may be more advantageous to concentrate on a more defined age group e.g., females aged between 19-35. By narrowing the age range, I can dedicate additional time to recruit participants in this age range which may yield results that are more robust and statistically significant. This may also result in being able to draw conclusions pertinent to this demographic, ultimately strengthening the project's aims and objectives.

Statistical analysis was conducted using SPSS software. I have previous experience using SPSS but always find it difficult to navigate compared to Microsoft Excel. As a data analysis tool, I have found SPSS to be challenging. Following a workshop at university I was looking forward to using SPSS to conduct the data analysis, as I was able to understand the concepts/tests as we were practicing with it for a few hours. However, as there were a few weeks between the workshop and using SPSS again, I found it difficult to conduct the quantitative data analysis from scratch. I find the programme complex and the number of different options for analysis is overwhelming. I did refer to some written information provided from the workshop, which included a flow diagram to establish which statistical test is best for the data set. I used online resources and tutorials which helped give me a refresher on how to use the software and the various functions it offers. I did find it easier to use Microsoft Excel for calculating means and standard deviations. One of the things I found most difficult was ensuring I had categorised my data variables correctly before choosing the appropriate statistical test. For example, I wanted to analyse any relationship between the length of time participating in a sport with participants' confidence on their carbohydrate requirements. I followed the flow diagram which showed I needed to use a Spearman's Rank Order test to do this. I followed the steps; however the output did not provide any data. I quickly realised I had not amended the dataset to include the appropriate data in numerical form. I then realised that I needed to input 'words' as numerical data for SPSS to understand. This resulted in a correct statistical output. The guidance provided in the videos helped clarify some of the foundational concepts, but I still struggled with deciding on the right tests to apply to my dataset. Once I began to understand how to manipulate and interpret the data, I can recognise the value of SPSS. On reflection, this has highlighted the importance of familiarising myself with the data before using the data

analysis tool. I feel I will benefit from further practice and will take any opportunity to attend future workshops held by the university.

During the workshop at university, we spent time using the NVivo software which is designed for qualitative data analysis. During previous research projects, I have always used Microsoft Excel to conduct thematic analysis manually. I would typically categorise response through a colour-coding system, which allowed me to easily identify themes within the data. I would then determine the counts i.e. number of responses corresponding to the theme. When I attempted to use NVivo to analyse the qualitative responses for this research project, I found it difficult primarily due to the small sample size. Similar to my experience with SPSS, I found I needed to refer to online resources and tutorials to re-familiarise myself with the software's features and functions. For this research project, I ultimately decided to revert to using Microsoft Excel to conduct the thematic analysis by hand, particularly because the responses were relatively short and the number of responders overall were limited. On reflection, I realise I could have been more specific and strategic with the qualitative questions asked in the survey. For example, one of the questions asked 'How do you currently fuel before/during your endurance training?'. The answers varied widely from specific foods consumed to general estimated volume of carbohydrate intake per hour. My intention with these questions was to determine specifically which foods or food groups participants were consuming, rather than obtaining their thoughts and opinions on what they believed they 'should' be having. If I decide to conduct a similar survey for my dissertation, it will be crucial to ensure that I phrase the questions in a way that elicits the specific information I aim to gather. To improve clarity, I could modify the question to read: 'How do you currently fuel during/before endurance training? Please be specific with the food items and portion sizes you generally consume'. By refining the question, I hope to obtain more specific and actionable data that will enhance the quality of the data. As discussed previously, a larger sample size will also help make thematic analysis easier.

Conducting this small research project, has provided me with valuable insights that will significantly inform my approach to my future dissertation. One of the key lessons I have learnt is the importance of not assuming that participants will complete a survey simply because they are invited to do so. Ensuring a more comprehensive and robust data set requires proactive strategies to engage potential participants and therefore enhance response rates. To achieve this, I believe I need to refine the inclusion criteria, particularly concerning age, and to broaden my outreach to a larger audience of potential participants. By expanding this potential pool of participants, I can improve the likelihood of obtaining a respectable number of responses, strengthening the validity of results. Another aspect I am considering is to expand the inclusion criteria to include female participants who engage in various forms of exercise regardless of duration. This change would allow participants to specify their chosen activities along with their usual duration of participation over a weekly basis. As a result, I could compare their responses to both general nutritional recommendations and those tailored specifically for endurance/strength training. This approach may prove better in obtaining a larger number of responses as it eliminates the restriction of participants needing to identify solely as engaging in 'endurance training'. Furthermore, since the proposed age for my dissertation is likely to be ~19-35, focusing on this demographic will likely be more manageable.

This age range aligns closely with my own, which will make it easier to access potential participants through my own social networks and connections.

Another element I am considering is gaining a more specific insight into participants' regular dietary habits, with a particular focus on carbohydrate intake. As I mentioned, some of the questions I asked in this survey resulted in non-specific responses. This has highlighted the need for me to carefully revise the phrasing of my questions to ensure clarity during my dissertation project. On reviewing the literature in this area of research, many researchers have utilised FFQ to acquire a better understanding of participants' dietary intake patterns. I am contemplating incorporating a comparable approach for my dissertation, potentially using either a 3-day food and exercise diary or a FFQ. Each method has its advantages, but conducting a 3-day diary would require me to set realistic time frames to account for the process of dietary analysis. Although I have never previously used food frequency questionnaire, I recognise the advantages they offer, and I plan to familiarise myself with their structure and implementation. FFQ can provide several advantages over a standard food diary; they take less time for analysis and can capture dietary patterns over a longer period. Additionally, they significantly reduce participant burden, which is a crucial element I must consider when recruiting participants.

In conclusion, conducting this smaller-scale project has helped me identify strengths and weaknesses in my approach, which I will take forward with me when conducting my dissertation. I have learnt valuable lessons, particularly relating to participant recruitment, and methods to enhance the specificity of my data collection. I understand that it requires thoughtful planning to assemble a representative sample of participants. Additionally, I have established that I need additional support and practice when using data analysis software to ensure I can conduct the appropriate analysis to get the most out of my data. I will continue to engage with available resources and reach out to my supervisor for support where needed.

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