

Candidate 1 evidence

Topic: Nutrition within Adolescent athletes.

Scottish Candidate number:

Research Question: How important is nutrition for optimum performance and recovery for adolescent athletes?

Objective 1: To find out how much adolescents know about the impact nutrition has on their athletic performance and recovery.

Objective 2: To find out a sport nutritionist's views on the impact nutrition has on athlete's overall performance and recovery.

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Appendix

Literature review

Adolescent athletes should be encouraged to make sure they consume 3 balanced meals¹ a day as well as snacks. 61% of all males and 34% of all females who play sports say diet play a key role in wellbeing and sporting performance.²

Nutrition is defined as the process of a living organism absorbing food and breaking it down for growth and it plays a crucial role in sporting performance.³ Adolescent athletes can struggle to reach optimal growth and development due to the demand of physical activity, therefore the nutrients that are required by the body are important. To optimise physical development, it is essential that there is awareness of what foods and drinks should be consumed, and what periods of the day mealtimes should fall in order to support the training schedule. Young athletes should consume meals before activity, aiming to avoid fats as they take longer to digest, and could cause an athlete to experience stomach upset which could therefore hinder sporting performance.⁴ According to the NHS, a well-balanced meal should include carbohydrates, as these ensure glucose breaks down into the bloodstream, sparing the use of proteins for energy.⁵ If a young athlete is lacking in energy due to a low carbohydrate intake, the body can start to break down muscle for energy⁶. The demand for iron differs for adolescent males and females, however both need an increase in adolescence. The rapid increase in body mass for male's results in a rise in demand for iron within the body, due to blood flow increasing whilst females are particularly at risk of having an iron deficiency through menstrual blood

¹ [Nutrition & Performance for Young Athletes - Children's Health \(childrens.com\)](https://www.childrens.com/nutrition-performance-young-athletes)

² <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6628334/>

³ <https://byjus.com/biology/nutrients/>

⁴ <https://kidshealth.org/en/parents/feed-child-athlete.html>

⁵ [Eating a balanced diet - NHS \(www.nhs.uk\)](https://www.nhs.uk/eating-a-balanced-diet)

⁶ <https://www.betterhealth.vic.gov.au/health/healthy-living/sporting-performance-and-food>

loss. To combat this deficiency, a diet of around 70g⁷ of red meat a day will allow the adolescents to gain a sufficient intake of iron thus preventing anemia. After an intensive game or training session, it is recommended that the adolescent athletes should eat within thirty minutes post activity⁸ and then a further 2 hours later⁹ should eat again, this is to allow the body needs to replenish energy stores after using up its available energy during sporting activities.

Nutritional needs vary throughout the ages and stages for young athletes; therefore, they have different nutritional requirements; however, a particular adolescent may require more energy as they are still developing, going through muscle development and growth spurts¹⁰. Calcium requirements are remarkably similar with adult and adolescent athlete diets as both need an adequate amount to reach bone density¹¹. Furthermore, athletes may lose calcium via sweat, in which case replenishment is suggested either via dietary intake of calcium-rich foods or a commercial calcium supplement. One major consideration for female athletes in terms of calcium needs and supplementation is the female athlete triad¹². This consists of three conditions: disordered eating, amenorrhea, and osteoporosis. Physically active women may fail to meet energy needs during training by intentionally restricting their intake of calcium rich foods. The consumption of the nutrient carbohydrates and fats are also like calcium, as the athletes gain long lasting energy from these nutrients to maintain elevated levels of energy throughout performance. The carbohydrate requirement for an athlete is approximately 45% to 65%

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[This Is What Happens When You Don't Eat After Working Out | SELF](#)

⁹ [Feeding Your Child Athlete \(for Parents\) - Nemours KidsHealth](#)

¹⁰ <https://www.stack.com/a/how-a-growth-spurt-changes-the-game-for-a-youth-athlete/>

¹¹ <https://healthyeating.sfgate.com/adult-vs-teen-nutrition-1083.html>

¹² [Calcium Requirements for the Athlete: Current Sports Medicine Reports \(Iww.com\)](#)

of food intake.¹³ Both adolescents and adult athletes should limit intake of saturated fats and sodium¹⁴ to avoid the risk of artery walls becoming narrowed and blocking blood flow therefore putting them at risk of cardiovascular conditions. Athletes with cardiovascular conditions must review the guidelines with coaches and physios before continuing in the sport.¹⁵ However, there should not be a total ban on saturated fats as restricting this food source totally can make it more challenging for athletes to get the energy they need to perform at their best.¹⁶

Research suggests that all individuals tend to snack at some point during the week¹⁷. It is important to keep in mind that snacking habits and cravings are completely normal and the patterns of these can drastically change from weekdays to weekends and to when competitive games and training occur. As discussed earlier in this literature review, immediately after activity the body requires a simple sugar to open the cells and provide additional energy; snacking assists this process¹⁸. Public Health Organisations can negatively influence an athlete's perception of snacks, portraying the heavy, highly processed unhealthy foods which can affect sporting performance¹⁹. Snacks are recommended in the diet of the young athletes, but the selection must be carefully considered. These should include fruits and vegetables as well as healthy and lean proteins. In addition, athletes are encouraged to eat at least two snacks daily as well as three larger meals throughout the day.²⁰ More snacks may be introduced into an athlete's diet depending on body goals in terms of physique. Completing sport can affect blood glucose levels so having a snack beforehand is important for glycogen stores to help adapt to activity levels for them not to drop²¹.

¹³ [Athletes Need to Eat Fat! | Winchester Hospital](#)

¹⁴ <https://healthyeating.sfgate.com/teens-different-nutritional-needs-adults-2456.htm>

¹⁵ <https://pubmed.ncbi.nlm.nih.gov/9934429/>

¹⁶ [Athletes Need to Eat Fat! | Winchester Hospital](#)

¹⁷ [Snacking On the Rise: 2019 Food & Health Survey Results – Food Insight](#)

¹⁸ <https://study.com/academy/lesson/how-do-sugar-molecules-cross-the-cell-membrane.html>

¹⁹ [The Science of Snacking | The Nutrition Source | Harvard T.H. Chan School of Public Health](#)

²⁰ [Sports Performance Nutrition for Athletes \(kansashealthsystem.com\)](#)

²¹ [Carbohydrates and Proteins for Athletes - Students | University of Saskatchewan \(usask.ca\)](#)

The saying, "No pain, no gain" is damaging to youths²². Adolescents are at risk of growth plate injuries if overtraining occurs at an early age. Similarly, it is vital to know that the musculoskeletal system of an adolescent cannot physically train in the way an adult can, as children's bones cannot take the stress levels which adults can, even though there may be a similar muscular strength to push them forward²³. Adolescents have the cardiovascular energy which pushes them although using this to ignore injury is extremely dangerous as the adolescent's main priority may be just to push to the next level.

Research conducted with 284 elite adolescent athletes concluded that a 1-year injury prevalence was 91.6%²⁴. Sports nutrition is not solely based around muscle gain and body goals, nor is it only focused on the intake of protein and carbohydrates for energy fuel. It also calls to attention that athletes should also take into consideration macronutrients and vitamins in a balanced and adequate diet and during recovery process through injury²⁵. The rehabilitation phase from an injury can be lengthy, and nutrition is a critical component in fast-healing time. Motivation levels can be low throughout the healing process as athletes are forcedly ruled out of activity. It is critical that athletes do not drop into a spiral of unhealthy habits, such as lack of rehabilitative training and not maintaining a healthy diet. Once the recovery process is complete and the rehabilitation phase begins it will make it more difficult to get back into a training regime, on top of aiming to get performance levels back to a fit level for them to feel fully prepared to go back into activity²⁶. In addition, when recovering from bone injuries such as fractures and breaks, athletes should aim to gain 1,500 milligrams of calcium per day in the recovery process to assist vitamin D and phosphorus in the strengthening of bones. Furthermore, for tendon and muscle injuries health experts advise that adolescent athletes should be getting vitamin C in the diet an hour or so before training to prevent any further damage to tendons, as vitamin C helps the body to produce collagen which

²² [The Social Stress of 'No-Pain No-Gain' - Dr. Phil Maffetone](#)

²³ <https://www.active.com/soccer/articles/the-dangers-of-overtraining-youth-876660>

²⁴ [High Injury Burden in Elite Adolescent Athletes: A 52-Week Prospective Study - PMC \(nih.gov\)](#)

²⁵ [Nutrition and athletic performance: MedlinePlus Medical Encyclopedia](#)

²⁶ ['It's psychologically devastating': The pain and mental trauma that comes with serious injury | The Independent | The Independent](#)

helps support the joints²⁷. Antioxidants are vital in immunity and recovery wellness after athletes who have endured surgery and are in the recovery process, as athletes may induce oxidative stress so the imbalance between the antioxidants and the free radicals can lead to weakened wound healing²⁸.

Hydration is a vital component in an athlete's diet. When an athlete exercises, the body temperature rises causing the body to sweat to prevent overheating, hence the need to replace the water lost through sweating²⁹. Numerous studies have confirmed that performance can be impaired when athletes are dehydrated. Proper hydration during training or match play will enhance performance, this also helps to avoid thermal stress, while helping delay fatigue, and preventing injuries which are associated with dehydration and sweat loss³⁰. Water lubricates the joints and helps in the transportation of nutrients such as carbohydrates and B vitamins which provides adolescent athletes with energy. This therefore prevents the athlete from experiencing muscle cramps which can impede performance and lead to acute injury as the athlete experiences uncontrollable spasms within muscles, similarly it reduces heat stress which prevents the possibility of heat stroke.³¹ Adolescents should be drinking 6-8 glasses of fluid a day. This includes water, lower fat milk and sugar-free drinks which include tea and coffee³².

This literature review has looked at multiple factors which influence overall performance for adolescent athletes. These factors include macro nutrients, micronutrients, hydration as well as the importance throughout a prompt recovery process.

To conclude, nutrition plays a key factor in an adolescent athletes' development and the diet they follow. Maintaining energy and glucose levels will impact on the endurance needed to complete at the sport, but also provides them with a barrier like protection from

²⁷ <https://www.healthline.com/nutrition/foods-supplements-for-sports-injury#:~:text=Vitamin%20C%20helps%20your%20body,rebuild%20tissue%20after%20an%20injury.>

²⁸ [Dietary antioxidants: can they help reduce post-exercise soreness? \(sportsperformancebulletin.com\)](https://www.sportsperformancebulletin.com/dietary-antioxidants-can-they-help-reduce-post-exercise-soreness/)

²⁹ <https://www.childrens.com/health-wellness/the-importance-of-hydration-for-young-athletes#:~:text=Staying%20hydrated%20increases%20energy%2C%20improves,reduce%20the%20risk%20of%20injuries.>

³⁰ <https://pubmed.ncbi.nlm.nih.gov/15212747/>

³¹ [Avoid Cramps from Football | Children's Hospital Colorado \(childrenscolorado.org\)](https://www.childrenshospital.org/avoid-cramps-from-football)

³² <https://www.nhs.uk/live-well/eat-well/food-guidelines-and-food-labels/water-drinks-nutrition/#:~:text=The%20Eatwell%20Guide%20says%20we,tea%20and%20coffee%2C%20all%20count.>

injuries, which could cause setbacks in performance. The athlete's diets should also require a moderate amount of protein as this is exceedingly key in the recovery process should an athlete experience injury. The protein in a meal will provide the athlete with repair and maintenance of any broken tissue and damaged cells which allows a prompt and cautious recovery.

Research plan

The researcher decided to use a questionnaire as the first research technique. The questionnaire consisted of 16 questions with multiple choice options for the respondents to choose from. The questions asked included closed and open questions where respondents had the option of 'other' where they could briefly describe another option, this therefore did not restrict the research. The researcher included a range of multiple-choice questions, this allowed the researcher to gain quantitative data in which they can quantify and draw conclusions out as the questionnaire could be shared with several individuals, this allows the researcher to compare and break down the responses for analysis. Carrying out a questionnaire was an effective method to gain information from a group of 24 adolescent athletes. The survey was placed on google forms. This allows the researcher to gain share the link for the survey efficiently and was able to target this at athletes as the survey introduction asked that it was only completed by athletes who participate in regular training and competition events.

The researcher carried out an interview with an expert Kristina Vavura, a registered dietician, who studied at Robert Gordon University and graduated with Masters of Dietician. This would gain reliable qualitative data, which was detailed as the nutritionist was qualified to be able to give an in-depth response to on the 9 interview questions asked in which the researcher needed to clarify and discover more from both the literature review and questionnaire results. This also allowed the researcher to clarify any points to make sure the research was reliable and not misinterpreted.

Interview

1) Is nutrition important in the recovery process after a sport-related injury?

Yes. Nutrition is a vital part in the recovery process along with other health management techniques. It is necessary to include appropriate nutrients that would speed up the recovery process such as collagen, amino acids etc.

2) How often would you recommend that adolescent athletes eat throughout the day?

It depends on their training schedule. However, usually adolescent athletes require a lot of energy and if the meals are spread out during the day, it is easier for them to digest and consume the meals. For example, 5-6 times a day: 3 main meals and 2 or 3 snacks.

3) When planning a diet, what factors should an athlete consider?

Fueling and replenishment. It is vital to properly fuel one's training but at the same time it is important to replenish the utilised nutrients to be able to train again at the same (or higher) intensity level.

4) How would you help an athlete who is struggling to meet their nutritional goals?

Usually, liquid forms of energy are more quickly absorbed, and meeting energy needs is easier therefore I would suggest this approach to the athlete for them to meet nutrition goals within their diet.

5) Is it true that protein is the most important macronutrient for an athlete to consume?

Absolutely not. Protein is essential for many processes in the body, and it cannot be excluded. However, glycogen- which is the main form of energy used for training, comes mainly from carbohydrates.

6) Is fat something that an athlete should be avoiding?

No. No macronutrient should be avoided. Fats are important for the synthesis of hormones and many other metabolic compounds. However, fat should be limited immediately prior and post workout since the body needs more time to absorb it.

7) Should athletes take extra vitamins and minerals?

If there are deficiencies-yes, they should investigate taking some although it may be best for them to speak to their dietician to be guided along a safe path.

8) Should athletes avoid energy-based drinks before and during performance

No. These may be a good way to replenish the lost nutrients or to fuel a workout.

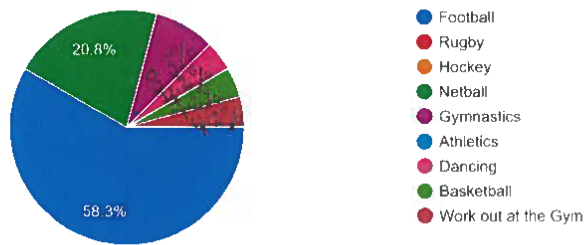
9) How long before the performance would you recommend an athlete eats a fulfilling meal?

20-30 minutes of an easily digestible snack. Otherwise, 2 hours prior to ensure food is fully settled and will avoid upset throughout activity.

Questionnaire

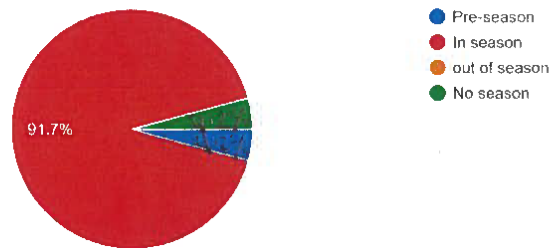
1. What sport do you compete in?

24 responses



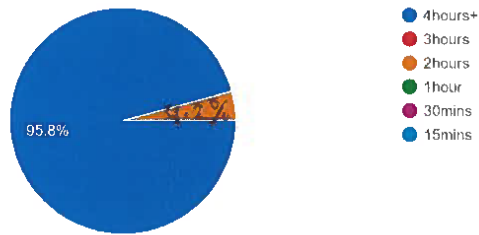
2. What broad phase of competition best describes your current competition and training schedule?

24 responses



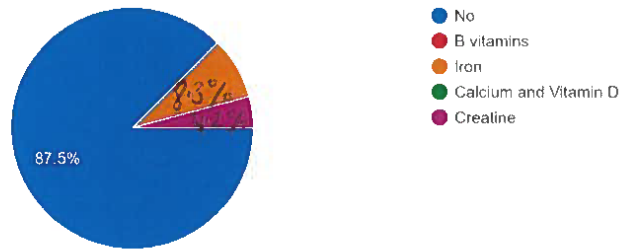
3. On average how many hours do you train per week including all fitness related activities, (at and away from your sporting club.)?

24 responses



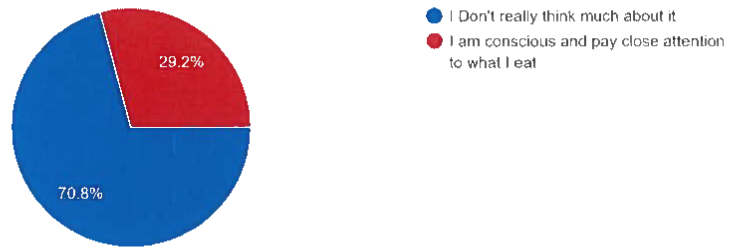
4. Do you take any vitamins and minerals?

24 responses



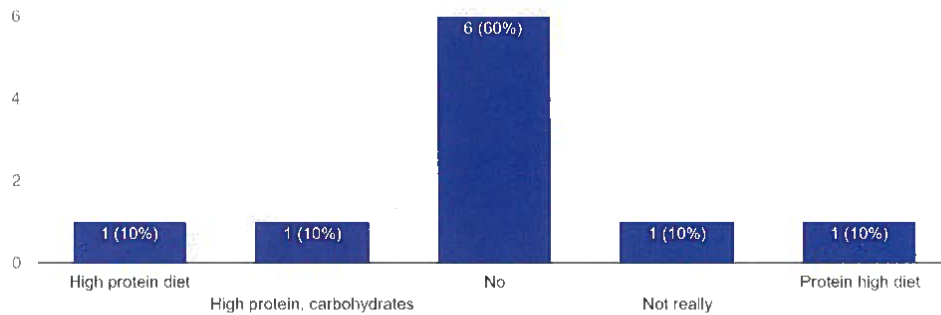
5. How conscious are you of what you are eating?

24 responses



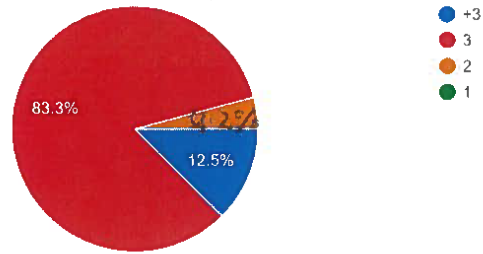
6. Do you eat any particular type of diet for your sport? if so briefly describe.

10 responses



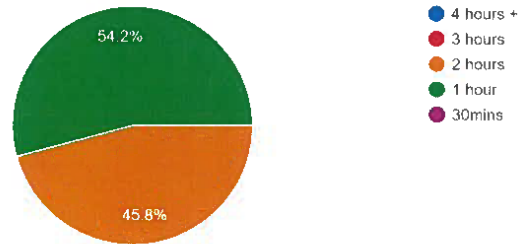
7. How many fulfilling meals do you eat a day?

24 responses



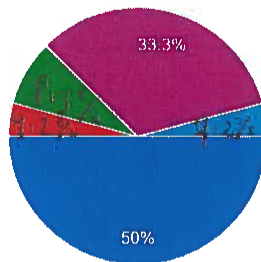
8. How long before activity do you eat a fulfilling meal?

24 responses



9. Are there any foods you avoid before activity?

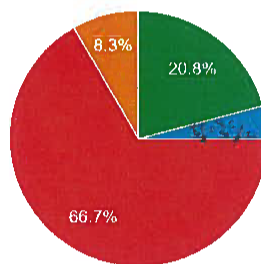
24 responses



- High fat foods- sausages, bacon, burgers, steak
- High carbohydrate foods- cereals, potatoes, rice, bread
- High protein foods- eggs, chicken, nuts
- High dairy foods- cheese, butter, yoghurt
- i don't tend to avoid anything in particular
- Sugar

10. Do you drink fluids while performing?

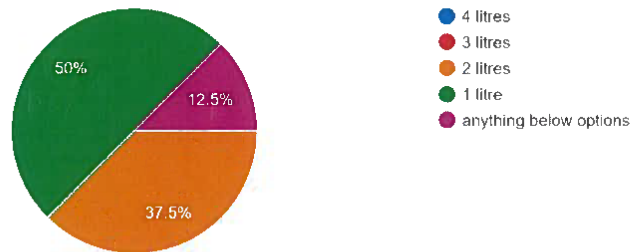
24 responses



- No
- Water
- Juice
- Energy hydration drink- Lucozade
- Energy can- Monster, Red bull, boost
- Pre workout, protein shake

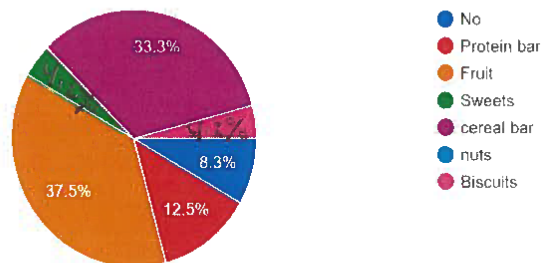
11. How many litres of liquid do you drink a day? (recommended 6-8 glasses a day, 8 glasses is 2 litres worth)

24 responses



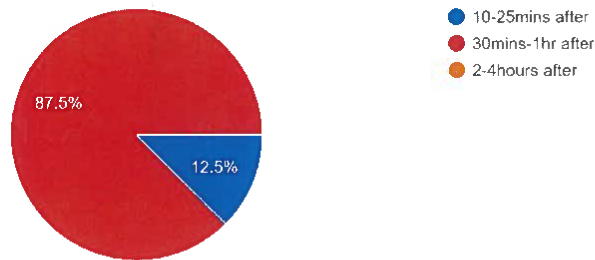
12. Do you eat a snack after performance?

24 responses



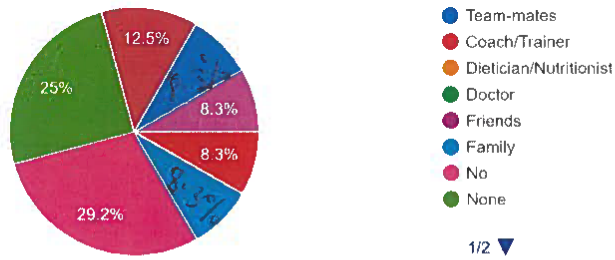
13. How long after activity do you eat a fulfilling meal?

24 responses



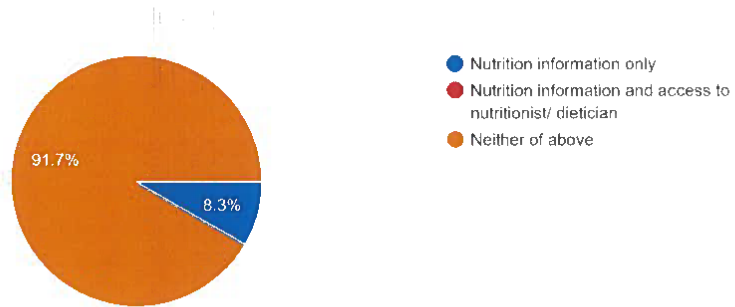
14. Have any of these individuals ever given you advice regarding your diet?

24 responses



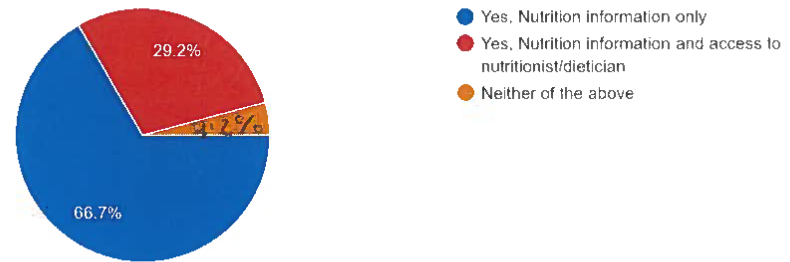
15. Does your sporting organisation provide you with access to nutrition information or Nutritionists/ Dieticians?

24 responses



16. Do you think that sporting organisations should provide members to nutrition information or nutritionists/dieticians

24 responses



Analysis

It was found in the literature review that adolescent athletes should limit their intake of saturated fats, however, there should not be a total ban on saturated fats as restricting this food source can make it difficult for athletes to get the energy, they require to perform to full potential. In the questionnaire (question 9) it was found out that 50% of respondents tend to totally avoid foods which provide a high intake of saturated fats before they carry out physical activity. This is noteworthy as it demonstrates adolescent athletes are led to believe this nutrient will only have a negative impact on performance, such as causing stomach upsets. Question 15 in the questionnaire also showed that 91.7% of respondents did not receive any nutritional guidance within their sporting organisation, so this may result in many limiting their intake of fats as well as other nutrients which are important for the synthesis of hormones and many other metabolic compounds. This is due to them not having the knowledge of what should be included in their diets, which therefore may be affecting their overall performance.

The literature review highlights that athletes are encouraged to eat at least two snacks or more throughout the day inclusive of three larger meals, this may prove challenging for some as time could prohibit this. The Dietician interviewed agreed with these meal and snack figures adding that it does generally depend on the training schedule of an athlete, however, they usually require a lot of energy therefore she suggests that if meals are spread out during the day it will be easier for them to digest and consume the meals. It was found out in the questionnaire that at least 83% of respondents eat at least 3 meals daily, this therefore allows them to gain access to nutrients in which they require for the body to reach optimal growth and development with the demand of energy they require for their physical activity as well as allowing an easy recovery process should the athlete encounter an injury.

Having an adequate diet rich in required nutrients is the key to an athlete's recovery process. It is important that athletes take into consideration the nutrients which should be included within their diet to prepare for recovery such as calcium, vitamin D and

phosphorus, due to fracture and bone breakages, to help with rehabilitation and a fast-healing process. The dietician insisted that nutrition is a vital part in the recovery process along with other health management techniques and that it is necessary to include appropriate nutrients that would speed up the recovery process such as collagen, amino acids etc. However, for the adolescents to begin including the likes of the appropriate nutrients and upping their intakes to meet important measurements they must receive guidance and information. In the questionnaire it was found (question 16) that 66.7% of respondents felt as though having the option of gaining nutritional information or access to a nutritionist or dietician through their sporting organisation would be useful. This is important to note as it backs up research (question 15) of the questionnaire as 91.7% of respondents are not provided with any access to nutritional information or access to a nutritionist or a dietician. This is noteworthy as it suggests adolescent athletes feel as though their sporting organisations are not taking into consideration athletes personal needs to fully develop to reach their full sporting potentials

In question 7 of the interview with the dietician it was asked whether athletes should take extra vitamins and minerals. The dietician answered that if an athlete is experiencing symptoms that could point towards a deficiency, then this is something they should investigate, although it is best for them to speak to a dietician to be guided along a safe plan. It was found out in the questionnaire that the majority (87.5%) of respondents did not take any vitamins and minerals, however the few that did answer responded that it was iron they were getting extra of due to deficiencies. In the literature review it insisted that the demand for iron is different between adolescent males and females as females are particularly at risk of having an iron deficiency due to blood flow increasing due to them going through menstruation, while males require a rise in demand due to the increase in their body mass therefore, they must gain an adequate intake of iron thus prevent them from gaining anemia, which would make them tired therefore they might struggle to carry out their sporting activity after a day of school and so the impact on their final performance levels may be affected.

In the literature review it indicates that adolescent athletes are at risk of growth plate injuries as well as other injuries through overtraining, as an adolescent's bones physically cannot train in the way an adult would as their bones cannot take the stress. In the questionnaire it was found (question 2) that 91.7% of respondents were currently in season of their sporting activity which required (question 3) 95.8% of respondents to train at least 4hrs plus throughout the week in preparation for them to perform to their best sporting ability in a game. Children have the cardiovascular energy that prompts them to be able to carry out this high amount of intensive activity throughout the week, this is as they have similar muscle strength as adults to push them forward however, injury is an extremely dangerous aspect within an adolescent athlete's life as the child's number one priority is to just push through it and carry on progressing to the next level, rather than taking the required steps in order to recover. Which results in them damaging their bodies further, which complicates the recovery process resulting in longer time spent out of their sporting activity which could have a negative impact on their motivation levels.

The literature review highlights the importance of hydration within an adolescent athlete's lifestyle claiming it's a 'vital component in an athletes' diet', this is as when an athlete exercises the body's temperature rises which causes it to sweat to prevent overheating from occurring. It is recommended that adolescents should be drinking 6-8 glasses of fluids a day, this includes water, lower fat milk and sugar free drinks which include tea and coffee. In the questionnaire it was found (question 11) that only 37.5% of respondents have the recommended intake of fluids daily. This is noteworthy as proper hydration during training or match play will enhance performance, as well as helping to avoid injuries which are associated with dehydration and water loss. Adolescents not having proper hydration means they are restricting the water from lubricating the joints in which helps in the transportation of nutrients such as carbohydrates and B vitamins therefore, adolescents are not only putting themselves at risk of injury they are also missing out on energy in which would allow them to perform at their highest potential.

The literature review highlights the importance of protein within the diet of an adolescent athlete indicating athletes require a moderate amount of protein as it is exceedingly key

in the recovery process should the athlete experience an injury. Protein within their diet will provide the athlete with repair and maintenance if any tissues and cells are damaged. Within the interview, the dietician (question 5) reiterated the importance of protein whilst reminding athletes that it is not any more important than the other macronutrients although it is extremely essential for many processes in the diet therefore should not be excluded within their diet. In the questionnaire it was found that 30% of respondents eat a particular type of diet for their sport (question 6), with their briefly described answers being a diet which is high in protein. This is concerning as in the literature review research conducted with 284 elite adolescent athletes concluded that a 1-year injury prevalence was 91.6%, which indicates that athletes are not seeking to consume higher amounts of dietary protein which results in a longer recovery process. This is due to them not having an adequate amount of protein in the diet to help with repair and maintenance of damaged body cells and tissues. Therefore, it may be concluded that younger athletes may not be aware that this nutrient is necessary for recovery.

In the literature review it highlights that athletes may lose calcium via sweat, in which case replenishment is advocated either via intake of calcium-rich foods or a commercial calcium supplement. It was found in the questionnaire (question 4) that no respondents took calcium/vitamin D supplements, this is noteworthy as it shows the adolescents may be lacking in calcium lost via sweat, and not replenishing their intake therefore can result in muscle cramps and the possibility of bone fractures in which would affect their performance negatively. Furthermore, this is concerning as it may indicate that adolescent athletes are unaware of the impact calcium can have on sporting performance and recovery and highlight the lack of nutritional advice they may not be receiving.

Evaluations

In the interview the expert suggested that athletes should consider liquid forms of energy to meet energy needs easier, as well as further management techniques which are

important in the recovery process for an adolescent athlete. If the study was to be done again it would be interesting to look further into this field as it was mentioned in the interview by the dietician as a way to help athletes meet developmental goals.

If the researcher was to rephrase question 6 of the questionnaire, 'if so briefly describe', they would have asked the adolescents 'what are the reasonings behind the choice to apply a particular type of diet?' Changing this to an open question would inform the researcher more information about the adolescent's nutritional knowledge around their diet.

The researcher conducted the interview by email. Reflecting, this made it difficult to clarify any information in which was received in which the researcher did not fully understand or felt needed further points therefore should this study be carried out again the researcher should carry out the interview in person.

In the literature review the researcher found out about the different nutritional requirements which adolescents require in comparison to adult athletes. This could be interesting to research further to see the difference between adolescent and adult athletes' nutritional knowledge. The researcher mentioned it within the literature review although no further research was conducted.

If the questionnaire was to be carried out again it would be collated in a different way so that the researcher knew what gender certain responses came from, such as if the respondents took any vitamin and minerals question. This would have been useful to know as in the literature review the different requirements in iron were found between adolescent girls and boys, it would be interesting to see if these responses backed up the research.

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[Calcium Requirements for the Athlete : Current Sports Medicine Reports \(lww.com\)](https://www.lww.com/health-care/sports-medicine-reports)

[Athletes Need to Eat Fat! | Winchester Hospital](https://www.winchesterhospital.com/health-care/athletes-need-to-eat-fat)

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<https://pubmed.ncbi.nlm.nih.gov/9934429/>

Accessed 1st November 2022

[Athletes Need to Eat Fat! | Winchester Hospital](#)

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[Sports Performance Nutrition for Athletes \(kansashealthsystem.com\)](#)

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[Carbohydrates and Proteins for Athletes - Students | University of Saskatchewan \(usask.ca\)](#)

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https://journals.iww.com/nsca-sci/fulltext/2010/02000/caffeine_and_energy_drinks.2.aspx#:~:text=Energy%20drinks%20improve%20endurance%20performance,%2C%20alertness%2C%20and%20reaction%20time.

12/04/2023, 13:54

ADOLESCENT ATHLETES

ADOLESCENT ATHLETES

1. 1.What sport do you compete in?

Mark only one oval.

Football

Rugby

Hockey

Netball

Gymnastics

Athletics

Other: _____

2. 2.What broad phase of competition best describes your current competition and training schedule?

Mark only one oval.

Pre-season

In season

out of season

Other: _____

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1/7

12/04/2023, 13:54

ADOLESCENT ATHLETES

3. 3. On average how many hours do you train per week including all fitness related activities, (at and away from your sporting club.)?

Mark only one oval.

- 4hours+
- 3hours
- 2hours
- 1hour
- 30mins
- 15mins
- Other: _____

4. 4. Do you take any vitamins and minerals?

Mark only one oval.

- No
- B vitamins
- Iron
- Calcium and Vitamin D
- Creatine
- Other: _____

5. 5. How conscious are you of what you are eating?

Mark only one oval.

- I Don't really think much about it
- I am conscious and pay close attention to what I eat

6. 6. Do you eat any particular type of diet for your sport? if so briefly describe.
- _____

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2/7

12/04/2023, 13:54

ADOLESCENT ATHLETES

7. 7.How many fulfilling meals do you eat a day?

Mark only one oval.

+3

3

2

1

8. 8.How long before activity do you eat a fulfilling meal?

Mark only one oval.

4 hours +

3 hours

2 hours

1 hour

30mins

Other: _____

9. 9.Are there any foods you avoid before activity?

Mark only one oval.

High fat foods- sausages, bacon, burgers, steak

High carbohydrate foods- cereals, potatoes, rice, bread

High protein foods- eggs, chicken, nuts

High dairy foods- cheese, butter, yoghurt

I don't tend to avoid anything in particular

Other: _____

<https://docs.google.com/forms/d/1SaaaACwaS5aWsUuQibXr7ioXaROh5G7VaFFT> 4NkNIA/edit

3/7

12/04/2023, 13:54

ADOLESCENT ATHLETES

10. 10. Do you drink fluids while performing?

Mark only one oval.

- No
- Water
- Juice
- Energy hydration drink- Lucozade
- Energy can- Monster, Red bull, boost
- Other: _____

11. 11. How many litres of liquid do you drink a day?(recommended 6-8 glasses a day, 8 glasses is 2 litres worth)

Mark only one oval.

- 4 litres
- 3 litres
- 2 litres
- 1 litre
- anything below options

12. 12. Do you eat a snack after performance?

Mark only one oval.

- No
- Protein bar
- Fruit
- Sweets
- cereal bar
- nuts
- Biscuits
- Other: _____

https://docs.google.com/forms/d/1SgqaACwqS5aWsUuQtbXr7joXaROh5G7VaFFT_4NkNIA/edit

4/7

12/04/2023, 13:54

ADOLESCENT ATHLETES

13. 13.How long after activity do you eat a fulfilling meal?

Mark only one oval.

- 10-25mins after
- 30mins-1hr after
- 2-4hours after
- Other: _____

14. 14.Have any of these individuals ever given you advice regarding your diet?

Mark only one oval.

- Team-mates
- Coach/Trainer
- Dietician/Nutritionist
- Doctor
- Friends
- Family
- Other: _____

15. 15.Does your sporting organisation provide you with access to nutrition information or Nutritionists/ Dieticians?

Mark only one oval.

- Nutrition information only
- Nutrition information and access to nutritionist/ dietician
- Neither of above

https://docs.google.com/forms/d/1SaaaACwaS5aWsUuQtbXr7ioXaROh5G7VaFFT_4NkNtA/edit

5/7

12/04/2023, 13:54

ADOLESCENT ATHLETES

16. 16. Do you think that sporting organisations should provide members to nutrition information or nutritionists/dieticians

Mark only one oval.

- Yes, Nutrition information only
- Yes, Nutrition information and access to nutritionist/dietician
- Neither of the above

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Google Forms

<https://docs.google.com/forms/d/1SgqaACwqS5aWsUuQtbXr7joXaROh5G7VaFFT4NkNtA/edit>

6/7

Candidate 2 evidence

Advanced higher Health and Food Technology- project

"Why online food shopping could be the new normal"

Word count: 3979

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Literature Review

"E-commerce has been growing at a remarkable pace for the last ten years, primarily due to its convenience. Online retail sales in the UK have more than tripled in the last ten years. Shoppers of all generations have embraced online stores as another convenient way to purchase their favourite items. Consequently, the UK e-commerce market today is 324% bigger than it was ten years ago".

Covid pandemic

Before the COVID-19 pandemic, online shopping could have been considered a luxury due to the additional cost for delivery, when we were able to go to the shop and avoid this extra payment.

The Covid – 19 pandemic resulted in non-essential shops being closed, as people's health was at risk consumers resorted to using online shopping. *"consumers shifted to online grocery shopping because of restrictions on movement and concerns about exposure to other people in indoor public spaces. Online sales of groceries surged"*¹

Consumers had to completely change their lifestyle as a result of the restrictions and rules introduced at the height of the pandemic and many are still nervous when in the company of others as the virus is still active, still spreading and people continue to become unwell as a result. *"The value of online sales suddenly spiked in 2020—the first year of the pandemic, due to lockdowns and stay-at-home advisories"*² As our shopping habits changed, many consumers will want to continue to use something that will be familiar with them allowing them to feel comfortable so may continue to use online shopping services. *"Online grocery shopping boom is here to stay as 90% of current online grocery shoppers plan to keep shopping for their groceries online once the peak of COVID-19 passes"*³

¹<https://www.mckinsey.com/industries/retail/our-insights/how-european-shoppers-will-buy-groceries-in-the-next-normal>

² <https://www.statista.com/topics/3144/online-grocery-shopping-in-the-united-kingdom/#topicOverview>

³<https://www.mintel.com/press-centre/click-spend-90-of-brits-plan-to-continue-online-grocery-shopping-even-after-peak-covid-19-passes/>

Lifestyle

Elderly people could be frail and weak, unable to walk for long periods of time so an activity like going to the supermarket could be a challenge for the elderly people, *"Some older people are housebound and unable to do their own shopping. Age UK works with the older person to create a shopping list and their groceries are then delivered to their home."*⁴ Charities like age UK have helped many elderly people who maybe aren't technology advanced, and this charity has supported the elderly with using a computer so they can order the food they need. *"In 2020, 96% of all UK households had access to the Internet. To illustrate, 100% of households with two members aged 16 to 64 had internet access, compared to the 80% of households with one member older than 65."*⁵ so elderly people without internet access would need support to have access to the food they required during the pandemic.

Consumers can make their online order at a time and in a place that suits them, the facility is able to be used 24/7 which is not always the case with shops. Those who have busy lifestyles working full time or shift patterns could struggle to get to the shops. *"The most convenient aspect of the internet is its time-saving nature, making online shopping perfect for those individuals whose busy lifestyles prevent them from visiting the high street on a regular basis. Rather than spending hours browsing through multiple shops, you can buy products in a couple of clicks online"*.⁶

⁴<https://www.ageuk.org.uk/services/in-your-area/shopping/>

⁵ <https://cybercrew.uk/blog/internet-usage-statistics-uk/#:~:text=While%20we%20are%20at%20it%2C%20check%20out%20how,of%20households%20with%20one%20member%20older%20than%2065>

⁶ <https://theonlineshoppingexpert.co.uk/expert-notes/why-shopping-online-is-better-than-in-store>

Inflation

In the United Kingdom, the main supermarkets, Asda, Tesco, Morrisons and Sainsbury's often referred to as the 'big 4', all have an online shopping facility consumers can use to get their food shop delivered to their home. However, in 2022 statistics have shown, the big four is no more as Aldi has overtaken Morrisons in the grocery market share. The rate that grocery price inflation is accelerating and is having an impact on how and where consumers spend their money. *"It seems there's no end in sight to grocery inflation as the rate at which food and drink prices are increasing continues to accelerate".*⁷

Supermarkets are reacting and acknowledging the challenges consumers are facing and offer best value, most of them increasing their own brand value ranges. *"Sales of the very cheapest value own-label products up by 33% this period versus a year ago"*⁸

Environmental factors

Online shopping can have a negative effect on the environment as more delivery vehicles will increase carbon emissions. *"When the number of delivery vehicles increases, so do carbon dioxide emissions, which makes up the bulk of greenhouse gas emissions. Increased traffic could lead to a 25% increase in carbon dioxide emissions in city centres"*⁹, so online shopping may not be suitable for environmentally concerned consumers, but some supermarkets are reacting to consumer concern and putting measures in place to tackle the issue. *'Sainsbury's pledged £1bn back in January to ensure it achieves net zero carbon emissions by 2040.'*¹⁰

⁷ <https://www.kantar.com/uki/inspiration/fmcg/2022-wp-big-four-line-up-changes-as-grocery-price-inflation-accelerates-again>

⁸ <https://www.kantar.com/uki/inspiration/fmcg/2022-wp-big-four-line-up-changes-as-grocery-price-inflation-accelerates-again>

⁹ <https://www.techtarget.com/searcherp/feature/The-environmental-challenges-of-last-mile-delivery>

¹⁰ <https://www.thegrocer.co.uk/sourcing/carbon-emissions-what-are-food-and-drink-companies-committing-to/651026.article>

Online shopping habits

A benefit of online shopping is the option to choose to shop in many ways. Consumers can choose to shop using an online website or an app on their phone, keeps a search history of past deliveries and filters their option choices in ways to make shopping online quicker and easier than instore shopping

“Consumers are methodical when shopping for groceries online. Some 28% look at suggested cheaper alternatives of the item they picked, 25% work from a list of previously ordered items and go from there, 25% type in product description and go from there, 16% type in the supermarket’s own brand and product description, 15% type in national brand and product description, and 14% look at the “people often also order this product” promo alongside the item they want.”¹¹

Research question

Are the changing trends in grocery shopping, changing customers shopping habits?

Objectives

- 1- Find out about the changing trends in grocery shopping.
- 2- Establish the reasons why consumers choose their method of shopping (online or in store).

¹¹<https://www.foodingredientsfirst.com/news/post-pandemic-shopping-habits-analysis-reveals-increase-for-retailers-brands-online-grocery-and-delivery-spike.html>

Research plan**Research Technique 1: Interview****Interviewee- Graham Ferguson – Manager at Morrisons East Kilbride**

An interview was chosen as a method of gathering data as it is easy to conduct, and no specialist equipment is required. An interview is a structured conversation where one participant asks questions, and the other provides answers. The interview was conducted over email and the interview contained 9 detailed questions. The interviewee was selected as being professionally qualified with many years' experiences on the topic ensuring results are valid and reliable.

Research technique 2 – Questionnaire**Responses- 122 anonymous respondents**

A questionnaire is a set of printed or written questions with a choice of answers, devised for the purposes of a survey or statistical study. This helps the researcher collect their response and is quantitative data. This research technique is inexpensive, quick and easy to conduct for both the researcher and respondents, this allowed the researcher to gather enough data quickly and easily. The research method was conducted on a Microsoft form which allowed the researcher to make the question easily and are Closed questions, so they are quick and simple to complete as there are no extended responses to record, so respondents are more likely to take the time to complete the whole questionnaire. There are 20 questions in the Microsoft form for respondents to answer. The target market was people that have had a different change to their shopping habits over the past 2 years.

Results from research techniques

Interview Questions

1- Has the pandemic had an effect on online sales?

Answer- Since the pandemic and during it online sales have grown massively. As a company Morrison's were not very competitive in online shopping but took advantage of lockdowns and social distancing. In our region of 33 stores, 18 stores offer home delivery service and all offer a click and collect service. As a store this business is worth over £100k per week.

2- Has the pandemic had an effect on foot fall in the store?

Answer- Yes there has been a decrease in footfall. Currently our footfall is -3% year on year and -5% since before pandemic. What also needs to be taken into account is the cost of living and how customers are using discounters more.

3- What do you think your customers see as the main benefits to online shopping?

Answer- Main benefits are you don't need to go into a shop and queue. Also, people's lifestyles play big part as more people don't have time to go to shops and they can have their shopping delivered at the click of a button.

4- What are the reasons Morrisons introduced online shopping?

Answer- Although the operation was there before the pandemic Morrisons had to react to the restrictions that were brought in and had to introduce online shopping to keep its customers from going to competitors. The way technology is going it would of only been a matter of time before they branched into this.

5- Statistically, what are the effects on the stores sales figures since introducing online shopping?

Answer- Currently taking £100k per week between home delivery, Deliveroo and click and collect. Since being introduced during the pandemic there has been an increase in store sales of +5%, however home delivery has only increased by +2% mainly due to the demand during covid. There is also some Morrisons store which have amazon which is similar to home shopping however it is all done through amazon.

6- What are the effects on the environment of offering online shopping?

Answer- Hopefully seeing less vehicles on the road. Also home shopping is totally bagless saving on plastics.

7- Do Morrisons have a policy on environment and climate change?

Answer - There's not really a policy, however they don't use plastic carrier bags anymore, only paper ones which have a charge encouraging customers to recycle. Encouraging customers to use their own containers when shopping from the deli and meat counters. Some stores have bottle recycling machines for customers to use. Introduction of electric home delivery vehicles.

8- Are online sales of branded or own branded products higher than in store?

Answer - I wouldn't say it was higher than in store however what you are noticing more of is the switch from branded to own brand products.

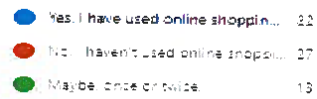
9- What do you think affects consumer food choice most when shopping online?

Answer - In this present climate it is definitely pricing. Frozen foods currently +25% ifl and own brands being heavily marketed.

Questionnaire results.

1. Have you used online shopping before the pandemic.

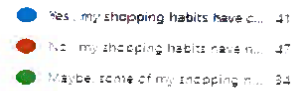
[More Details](#)



82/ 122 people or 67% have used online shopping before the pandemic .

2. Do you think that COVID-19 has changed your shopping habits.

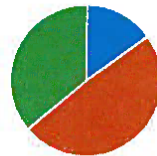
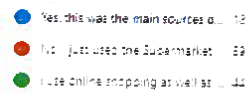
[More Details](#)



47/122 or 38% of respondent's shopping habits have not changed due to the pandemic, 41/122 or 33% of respondents said that their shopping habits have changed.

3. Was online shopping the main sources of how you had to get your shopping.

[More Details](#)

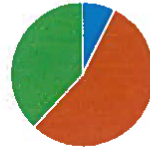


59/122 or 48% of respondents said that they just used the supermarket to get their shopping compared to 44/122 or 36% who used both online and supermarket.

4. Would you ever stick to just using online shopping for food instead of going into a supermarket.

[More Details](#)

- yes, I would stick to online shop... 9
- no, I would still go to the super... 66
- Both, I would still use online sho... 45

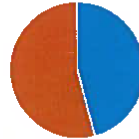


66/122 or 54% said that they would still stick to using the supermarket instead of doing a online shopping.

5. Do you live in a busy household (i.e. late working shifts or children that have many after school clubs) and requires you to use online food shopping.

[More Details](#)

- Yes, my household is very busy... 58
- No, my household isn't very bu... 66

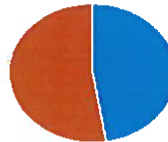


66/122 or 54% of respondents said that their household isn't busy due to working shifts or after school clubs.

6. Do you think having online shopping has made it easier for you to get your shopping due to late working patterns or school clubs.

[More Details](#)

- Yes, this has made it easier for ... 52
- No, this hasn't made it easier fo ... 64

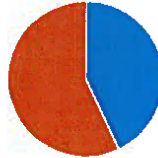


64/122 or 52% of respondents feel that online shopping hasn't made it easier for them due to working or clubs.

7. do you feel online shopping saves you many hours looking in supermarkets

[More Details](#)

- Yes it saves me many hours wh... 51
- No I feel I spend more time onli... 52

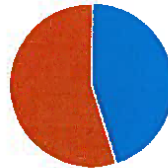


68/122 or 55% of respondents feel they spend more time online rather than in a supermarket.

8. do you feel that you spend more money when doing online shopping

[More Details](#)

- Yes I feel I spend more money ... 54
- No I spend less money when d... 56

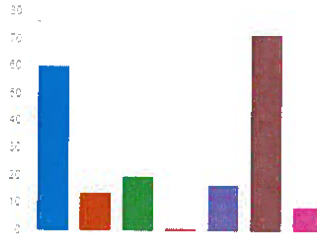


66/122 or 54% of respondents feel they spend less money when doing online shopping.

9. What supermarket would you choose to do your online shopping.

[More Details](#)

- Asda 50
- Iceland 14
- Morrisons 20
- Ocado 1
- Sainsbury's 17
- Tesco 72
- Waitrose 9



72/122 or 69% of respondents would choose to shop at market leaders such as Tesco.

10. How often would you order online shopping

[More Details](#)

Weekly, all the time...	22
Monthly, maybe once every two...	31
Seasonal, once per season...	20
Never / hardly use them...	40

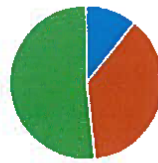


40/122 or 32% of respondents said that they never order online shopping compared to 31/122 or 25% of respondents who maybe do monthly shopping/ once or twice a month.

11. Do you think about the planet when you do your shopping online.

[More Details](#)

Yes, I do think about the planet...	13
I think about it, but not all the ti...	45
No, I don't think about the plan...	62

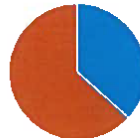


62/122 or 50% of respondents said that they don't think about the planet when they do shop online.

12. do you think that having increased delivery vans on the road, is having a negative impact on our climate.

[More Details](#)

Yes, I think online shopping deli...	22
No, I don't think online shoppi...	76

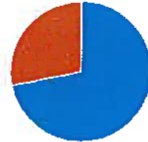


76/122 or 62% don't think that online shopping delivery vans have a negative impact on our climate.

13. having companies that want to decrease carbon emissions, does this make you attracted to these companies as they like to help save the planet.

[More Details](#)

- Yes this makes me more attract... 86
- No this makes me less attracted... 34

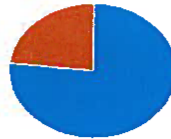


86/122 or 70% of respondents think that having a company that wants to decrease carbon emissions makes them attracted to these companies.

14. Do you find these online websites, easy to access i.e. different headings for different categories within the shop.

[More Details](#)

- Yes, I find the websites easy to a... 92
- No, I don't find it easy to access... 30



92/122 or 75% of respondents find that online websites are easy to access due to different categories within the company website.

15. Do you find these online websites, easy to use, i.e. clicking on a food products and it automatically going into your basket.

[More Details](#)

- Yes, I find it easy to use... 98
- No, I don't find it easy to uses... 24

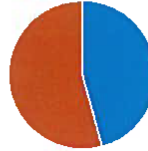


98/122 or 80% of respondents feel that it is easy to use as the food when clicked automatically goes into customers baskets.

16. Do you find it easier to see products information i.e. serving instructions or allergy information.

[More Details](#)

- Yes, using online allows me to see... 55
- No, I find it easier to see the food... 45

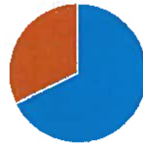


65/122 or 53% find it easier to see product information in-store rather than online.

17. Do you like have a search history on the food websites as you don't need to search of every product every time you do your online shopping.

[More Details](#)

- Yes, I like having the search hist... 65
- No, I don't like having the search... 35

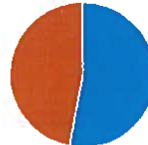


80/122 or 65% of respondents feel that they like having a search history every time they do online shopping.

18. Do you feel you don't over buy when you do online shopping.

[More Details](#)

- Yes, I feel I don't overbuy when I... 51
- No, I feel I buy more when I do... 49

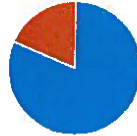


63/122 or 51% of respondents feel that they don't overbuy when doing online shopping.

19. Do you like that online food shopping is in complete control of your hands as you can choose delivery times and dates which can be suitable for you.

[More Details](#)

- Yes, I like having the control in ... 96
- No, I don't like having the control ... 26

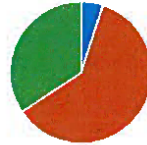


96/122 or 78% of respondents like that online shopping is in their control as they get to choose delivery times and dates.

20. Would you keep just doing online shopping, alternate between shops and online or just keep doing supermarket shopping.

[More Details](#)

- yes, I would just do online shop... 5
- I would do both online and sup... 74
- no, I would just do supermarket... 43



74/122 or 60% of respondents said that they would alternate doing both online and in-store shopping.

Analysis and Conclusions

The researcher found in the literature review that online shopping could have been considered a luxury due to the additional cost for delivery, when we were able to go to the shop and avoid this extra payment. When asking the manager who took part in the interview, they said that although the operation was there before the pandemic Morrisons had to react to the restrictions that were brought in and had to introduce online shopping to keep its customers from going to competitors. **one question from the questionnaire where the researcher found out, 82/ 122 people or 67% have used online shopping before the pandemic.** Therefore, it can be concluded that people were familiar with using these online websites and when it came to heightened restrictions, this was what everyone resorted to and was not something that was new to them.

The researcher found in the literature review that consumers shifted to online grocery shopping because of restrictions on movement and concerns about exposure to other people in indoor public spaces, Online sales of groceries surged. When asking the manager who took part in the interview, they said that yes, there has been a decrease in footfall. Currently our footfall is -3% year on year and -5% since before the pandemic. One of the questionnaires where the researcher found out that 47/122 or 38% of respondent's shopping habits have not changed due to the pandemic, 41/122 or 33% of respondents said that their shopping habits have changed. Therefore, it can be concluded that from a business point of view having online shopping have benefited the business for sales and profits. However, from a customer's point of view, they have kept just going into the supermarket so not all the sales from the business came from online shopping but however the foot fall in the store has had an impact on the supermarket.

The researcher found in the literature review that Online grocery shopping boom is here to stay as 90% of current online grocery shoppers plan to keep shopping for their groceries online once the peak of COVID-19 passes. When asking the manager who took part in the interview ,as a company Morrisons were not very competitive in online shopping but took advantage of lockdowns and social distancing. In our region of 33 stores, 18 stores offer home delivery service, and all offer a click and collect service. As a store this business is worth over £100k per week. One of the questions where the researcher found out is that 66/122or 54% of respondents feel they spend less money when doing online shopping. Therefore, it can be concluded that although the business was getting a better financial position with the increase in online shopping, customers habits made them spend less money when shopping, so other profit being made must been from other services that the business provides for customers.

The researcher found in the literature review that the most convenient aspect of the internet is its time-saving nature, making online shopping perfect for those individuals whose busy lifestyles prevent them from visiting the high street on a regular basis. Rather than spending hours browsing through multiple shops, you can buy products in a couple of clicks online. When asking the manager who took part in the interview, also people's lifestyles play big parts as more people don't have time to go to shops and they can have their shopping delivered at the click of a button. One of the questions from where the researcher found out is that 64/122 or 52% of respondents feel that online shopping hasn't made it easier for them due to work or clubs. Therefore, it can be concluded that online shopping was supposed to be easy for customers that have busy lifestyles i.e., late working patterns or school clubs, but in fact having online shopping has made it harder for them as they stress about when their shopping is going to get delivered if a time isn't given to them by the companies they have chosen which in later on could give the business a bad reputation if other customers have heard about this.

The researcher found in the literature review that however, in 2022 statistics have shown, the big four is no more as Aldi has overtaken Morrisons in the grocery market share. When asking the manager who took part in the interview, they said that since being introduced during the pandemic there has been an increase in store sales of +5%, however home delivery has only increased by +2% mainly due to the demand during covid. There is also some Morrisons stores which have Amazon which is like home shopping however it is all done through Amazon. One of the questions where the researcher found out that 59/122 or 48% of respondents said that they just used the supermarket to get their shopping compared to 44/122 or 36% who used both online and supermarket. Therefore, it can be concluded that business like Morrisons can provide many other services like Amazon or click and collect to help these customers but looking at customer opinions they think just going into the supermarket is more helpful to them rather than using these different services.

The researcher found in the literature review that When the number of delivery vehicles increases, so do carbon dioxide emissions, which makes up the bulk of greenhouse gas emissions. Increased traffic could lead to a 25% increase in carbon dioxide emissions in city centre. When asking the manager who took part in the interview Hopefully seeing less vehicles on the road. Also, home shopping is totally bagless saving on plastics. One of the questionnaires where the researcher found out that 76/122 or 62% don't think that online shopping delivery vans have a negative impact on our climate. Therefore it can be concluded that the overall number of increased delivery vans have increased the carbon emissions in the air and could contribute to many environmental damages however companies like Morrisons are trying to reduce their carbon emissions so that the business can be more sustainable but customers still think that the increases in vans do not damage the planet so they might think to keep ordering online then that will in later time there will be an increase in carbon emissions.

The researcher found in the literature review that Sainsbury's pledged £1bn back in January to ensure it achieves net zero carbon emissions by 2040. When asking the manager who took part in the interview, they said that, however they don't use plastic carrier bags anymore, only paper ones which have a charge encouraging customers to recycle. Encouraging customers to use their own containers when shopping from the deli and meat counters. Some stores have bottle recycling machines for customers to use. Introduction of electric home delivery vehicles. One of the questionnaires where the researcher found out that 86/122 or 70% of respondents think that having a company that wants to decrease carbon emissions makes them attracted to these companies. Therefore, it can be concluded that companies are trying to decrease their carbon emissions so customers that are attracted to companies will have more of a selection to choose from and know that they are trying to help the planet.

The researcher found in the literature review consumers can choose to shop using an online website or an app on their phone, keeps a search history of past deliveries. When asking the manager who took part in the interview. Also, people's lifestyles play a big part as more people don't have time to go to shops and they can have their shopping delivered at the click of a button. One of the questionnaires from where the researcher found out 98/122 or 80% of respondents feel that it is easy to use as the food when clicked automatically goes into customers' baskets. Therefore, it can be concluded that if customers had to do an online shop, they won't struggle to use the website as it has been used before and it is quite straightforward to use and will not cause much trouble for the customer.

The researcher found in the literature review 25% work from a list of previously ordered items and go from there, 25% type in product description and go from there. When asking the manager that took part in the interview more people don't have time to go to shops and they can have their shopping delivered at the click of a button. One of the questionnaires where the researcher found out 65/122 or 53% find it easier to see product information in-store rather than online. Therefore, it can be concluded online websites can also let customers see product information i.e., allergy and storage information in a section below the food product but when asked customers opinions they like seeing information preferably to the personal eye instead of seeing it on a website.

Evaluation

Overall, the research process was successful, however if it was to be carried out again there would be things that the researcher would change.

The questionnaire was created through Microsoft forms which allowed the survey to be shared through an online link. This provided an easy link for the researcher to collect the correct number of results as it can be sent through text or email to friends and family. This meant that research could collect 122 responses. If this type of research was to be carried out again, it would be beneficial for the researcher to post on social media as it is easy to paste the link into their accounts in order to collect more results. The layout of Microsoft forms will help the reliability of the results as the simple layout would mean that it would make it very unlikely that the respondents would make errors.

The interview was carried out with Morrisons manger Graham Ferguson. As he regularly had a busy schedule with working in a supermarket, the interview had to be carried out by email. This made it difficult for the researcher to ask for more detailed answers and meant that the information that was provided was limited. If the researcher was to carry out the interview again, it would be more beneficial for them to arrange a time with the interviewee to ask the questions as this would allow for a more open discussion with more detailed answers.

Within the questionnaire and interview, the researcher asked questions regarding the change in food trends. This would have been helpful to research in the literature review stage to provide more information that could be used in the interview and questionnaire. If this had been researched, it may also have allowed the researcher to compare results more easily.

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