

# AI-Powered Performance Nutrition Advisor

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# Background

The passion that came with playing and watching sports my whole life made me look into players and careers differently than the average person. I have always been more of a fan of a team, which meant I could connect with the players in an athletic way more than just seeing them as idols. Today almost every fan cares more so about success in their team rather than the physical and mental aspect of their players and why they are hurt. After researching more on google trends it gave an even better perspective to this statement. Seeing the interest in Sports Performance was much greater than Sports Nutrition and mental health didn't surprise me but what did was how much more interest there was in performance rather than nutrition and mental health. America today sees these athletes as almost robots who they can root for and bet on rather than actually caring for their well being. Coming from an athlete, I can support this and have experienced people I knew and even coaches care more about my performance rather than my nutritional intake. After stating all of this my E-commerce business idea would be an AI generated performance nutrition advisor. After researching and finding all new information, it made sense this would become my new and improved advisor for professional athletes. The lack of knowledge from athletes in general for what specifically they should be eating and in what amounts, should concern coaches, fans and even themselves because they aren't using themselves to the fullest potential.

## Objective/Goals of the Project

### **Exploring the Relationship Between Sports Nutrition and knowledge in E-Commerce:**

In today's increasingly health-conscious society, the intersection of sports nutrition and knowledge has become a focal point for athletes, fitness enthusiasts, and health-conscious consumers alike. As individuals seek to optimize their athletic performance and achieve their fitness goals, the role of nutrition in enhancing performance has gained significant attention. E-commerce platforms play a crucial role in facilitating access to sports nutrition products, providing consumers with a convenient and accessible way to purchase supplements, snacks, and other nutritional aids. But, leave out the importance of knowing what you are eating and what you should be.

### **Trends in Sports Nutrition and Performance:**

Startup Idea : AI-Powered Performance Nutrition Advisor:

My innovative startup idea involves leveraging artificial intelligence (AI) technology to develop an intelligent nutrition advisor platform focused on optimizing athletic performance and knowledge to the athlete. The platform would utilize advanced machine learning algorithms to analyze individual performance data, dietary habits, and physiological parameters to provide personalized nutrition recommendations and strategies. Through a user-friendly interface, athletes and fitness enthusiasts would gain actionable insights and guidance on optimizing their nutrition to maximize performance, recovery, and overall health.

Key Features and Benefits:

- Personalized nutrition plans tailored to individual performance goals, dietary preferences, and training regimens.

- Real-time monitoring and feedback on nutritional intake, hydration levels, and macronutrient balance.
- Integration with wearable fitness trackers and biometric sensors to capture relevant data for analysis.
- Continuous learning and refinement of recommendations based on user feedback and performance outcomes.

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In summary, while sports nutrition remains an essential component of athletic performance and overall well-being, its prominence in the e-commerce landscape may be overshadowed by the enduring fascination with performance optimization. However, by leveraging innovative solutions and personalized approaches, startups have the opportunity to bridge the gap between sports nutrition and performance enhancement, empowering athletes and fitness enthusiasts to achieve their goals more effectively. Besides text mining I also ended you keeping some google trends graphics in my presentation due to the relevance it had. Sports performance was far more relevant compared to sports nutrition and athlete mental health.

## Data Extraction/Collection/Data Exploration

I ultimately dove into an article where I got my datasets from a few different tables. The article was on the testing of student athletes and getting different sorts of information from them due to their class, age, gender, and many more variables.

1. Engaging and enjoyable nutrition education (NE) through a mixture of kinaesthetic, aural, and visual techniques: An AI-powered performance nutrition advisor can use multimedia content, interactive quizzes, and gamification techniques to make NE more engaging and enjoyable for athletes.
2. Setting goals and two-way feedback: An AI-powered performance nutrition advisor can help athletes set personalized nutrition goals and provide real-time feedback on their progress. This can help athletes stay motivated and accountable.
3. Credible education on energy, macro- and micronutrient, and hydration needs: An AI-powered performance nutrition advisor can provide evidence-based information on nutrition needs for athletes. This can help athletes make informed decisions about their nutrition choices.
4. Nutrition-related life-skills: An AI-powered performance nutrition advisor can provide practical advice on how to adapt meals to meet nutrition requirements. This can help athletes develop self-efficacy and confidence in their ability to make healthy nutrition choices.

5. Preferred format and frequency of NE sessions: An AI-powered performance nutrition advisor can provide flexible and convenient NE sessions that fit the preferences of athletes. This can help increase engagement and adherence to NE.
6. Preferred facilitator: An AI-powered performance nutrition advisor can provide personalized recommendations for a performance dietitian or nutritionist based on the preferences of athletes. This can help build trust and rapport between athletes and their nutrition advisors.
7. Further research: An AI-powered performance nutrition advisor can use data and insights from user feedback and analytics to inform future research and development. This can help improve the effectiveness and relevance of NE for athletes.

## Data Analysis/ Data Mining/Text Mining

I then began my data extraction where I would be able to mine the text from ultimately three tables given to me in the article. Here are some examples of what I did in my python code.

```
{'neg': 0.0, 'neu': 0.41, 'pos': 0.59, 'compound': 0.8012}
```

In this example, we used the NLTK library to perform sentiment analysis using the VADER (Valence Aware Dictionary and sEntiment Reasoner) algorithm. The algorithm returns a sentiment score between -1 and 1, where -1 indicates negative sentiment, 0 indicates neutral sentiment, and 1 indicates positive sentiment.

Next:

	Variable	Variable.1	Participants, n (%)
0	Age in years	NaN	NaN
1	NaN	Median (25th, 75th percentile)	22.0 (18, 27)
2	Gender	NaN	NaN
3	NaN	Female	68 (54.8)
4	NaN	Male	50 (40.3)
..	...	...	...
58	Years competing Tier 3	1 to 3	41 (33.1)
59	NaN	3 to 5	37 (29.8)
60	NaN	5 to 10	24 (19.4)
61	NaN	10 plus	14 (11.3)
62	NaN	Not answered	8 (6.5)

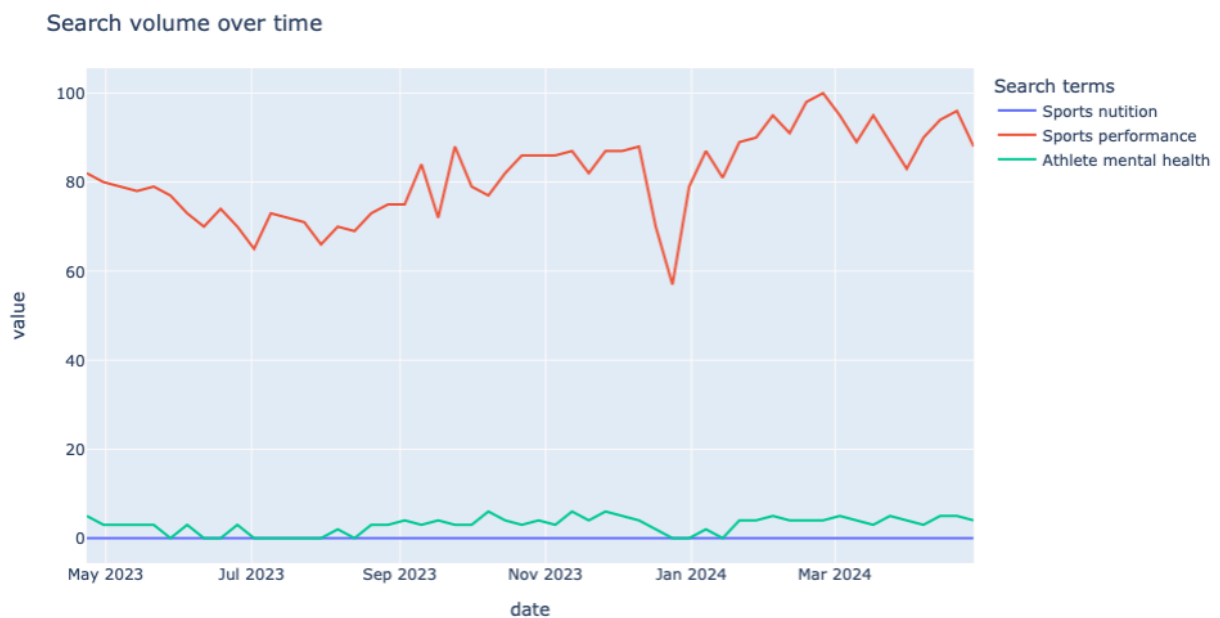
[63 rows x 3 columns]

Above, I cleaned the data to make the table I received in an html file and edited it in python. I did this after I performed the process of text mining. I also was able to extract the data, then ultimately replaced variable names and manually plugged in information.

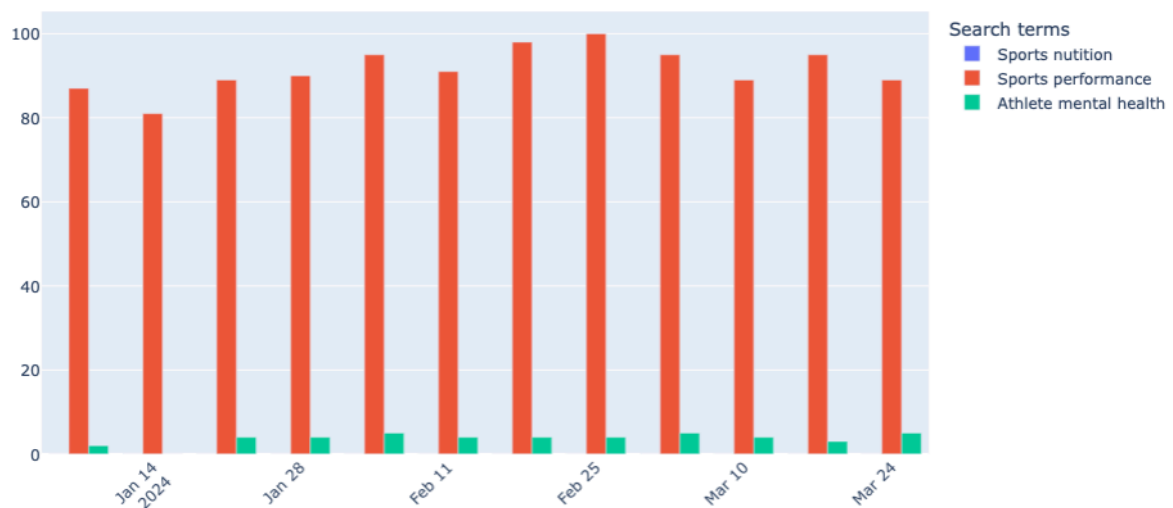
```
variable_data['Highest Education Level'] = variable_data.pop('Highest education level a')
```

Above this code removes the key 'Highest level of education level a' and adds a new key 'Highest Education Level' with the same value.

I also implemented google trends, like I spoke about earlier.



Search volume between 2024-01-01 and 2024-03-31



Both these graphs I received after searching up, Sports nutrition, Sports performance, and athlete mental health, I received very similar outcomes. Sports performance is a huge outlier in regards to interest in searches compared to the other two. This supports the moral of my project, that nobody cares about sports nutrition when it comes to athletes, and the importance of it is extremely low, but in realization it is extremely important.

## -Conclusions/Recommendations

As you can see from this google trends data, there is far more interest in Sports performance than Sports nutrition and Athlete mental health which is quite concerning, as to why I believe my business idea with all of this background information would be a great idea for athletes around the world.

Overall, after all the conclusions I provided, it does indeed highlight the importance of personalization, engagement, and evidence-based information in NE for athletes. An AI-powered



performance nutrition advisor can help deliver these features and provide a more personalized and effective NE experience for athletes. Athletes will feel more comfortable with knowing the importance of nutrition and are able to set goals for themselves and see the performance not just off the field but on.

## -Bibliography/References/Works Cited

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10255212/>

<https://trends.google.com/trends/explore?date=today%205-y&geo=US&q=%2Fm%2F0fqk,Sports%20performance,Athlete%20mental%20health&hl=en-US>