NORTHERN ILLINOIS UNIVERSITY

Health Consciousness is High School Baseball

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ABSTRACT (100-200 WORDS):

The purpose of this study was to address the health consciousness of high school baseball players. A group of high school baseball players were asked to fill out a survey for 4 to 7 days that recorded their diet, daily exercise, amount of sleep, and amount of screen time. The nutrition data recorded by the players was put into SuperTracker, an online food intake tracker. All of the data was recorded and compared to the recommendations found in the literature review. It was found that most of the players did not meet the nutritional recommendations, but did, however, meet the recommendations for sleep and screen time usage and exceeded the recommended amount of daily exercise.

Problem Statement

The purpose of this study was to address health consciousness of high school baseball players. This study will hopefully help to increase awareness of nutritional habits in high school athletes along with sleep patterns, habitual use of electronics, and daily physical activity. The hypothesis is that the baseball players will not meet daily nutrition recommendations, will meet exercise recommendations, and, on average, will exceed recommended use of electronics and not exhibit regular sleeping patterns.

Literature Review

While skill is a vital part to a positive performance, there are several other portions to performing well that are often undermined. Many high school athletes assume that they are healthy simply because they are playing a sport and are active at practice. What they might not realize is that there are several other aspects of health that need to be considered, including nutrition, sleep, and screen time.

The difficult part about nutrition in baseball is that there is no single diet plan to follow. Everything in baseball varies: the positions on the field, the weights and muscle masses of the players, the speed and reaction times of the players, etc. Because of this, the needs of each player, in terms of nutrients, exercise, sleep, and allowed screen time, may be different.

When considering the roles of each player in baseball, it's important to address how much action they get. For example, a pitcher and catcher touch the ball every single pitch of the game, whereas an outfielder may not even touch it. Another example would be how a third baseman has much less ground to cover than an outfielder, which usually means significantly less sprinting. As a result of this intermittent activity, it is likely that their diets will not be the same. According to the Encyclopedia of Sports Medicine (Maughan, 2008), the following can be used as general rule for baseball players:

> Athletes that are taking part in team sports should have a balanced diet that contains large amounts of carbohydrate to allow for a high training efficiency and for optimal preparation for matches. Therefore, it is important for the players to be conscious of the nutritive value of the food that they consume (p. 585).

In other words, if a baseball player does not have a balanced diet and/or does not consume enough carbohydrates prior to a game, their performance may be negatively affected.

One thing that comes naturally to most athletes is daily physical activity. According to Gavin (2014), teens are recommended to get at least one hour of physical activity per day for most days of the week. While it may not happen every single day of the week, it is easy for most athletes to get at least one hour of physical activity per day. Baseball teams, including the team in this study, either have practice, workouts, or games at least five days of the week during the season.

Another aspect of health that can potentially affect the performance of an athlete is sleep. Getting a sufficient amount of sleep is imperative to health for a number of reasons, especially for teenagers. According to Gavin (2013), teens require anywhere from 8 to 10 hours of sleep every night. Sleep can impact functions of the brain such as memory, response time, and concentration (Gavin, 2013). According to Mary Jacobs (2013), teen athletes who do not get enough sleep are more likely to get injured and are more likely to win competitions when they get good-quality sleep.

Finally, a health concern that is often overlooked is screen time. With the rise of technology in recent years, the use of electronics has skyrocketed. While there used to be a set limit on screen time allowance for adolescents, professionals have recently moved away from that and are suggesting a balanced use of technology (Wallace, 2015). There are many ways in which technology can be utilized positively. Many schools now implement the use of computers for learning, which is important because of today's constantly-changing world of technology. Teens often enjoy activities such as playing video games and watching television for hours on end. The issue with that is that it promotes a sedentary lifestyle, which is not the lifestyle of successful athletes.

Methods & Design

This study involved the collection of data from freshman baseball players at Genoa-Kingston High School. A survey was given to 17 players that addressed four different health topics: nutrition, exercise, sleep, and screen time. The players were instructed to record specific details in each section for 4 to 7 days. Each section asked questions that were designed to facilitate increasing health consciousness in the players.

Questions in the nutrition section included the following:
- How hungry were you on a scale of 0-3?
- What were you doing while eating this food?
- Where were you eating this food?
- How much time did you spend eating this food?
- Why did you choose this food?

Aside from the exercise section asking what specific physical activity did the player participate in, it also asked how long they participated in the activity and for them to rank the intensity of the activity as either low, moderate, or high. The sleep section asked how for the total amount of sleep they got and whether or not they felt rested. The screen time section asked for the direct amount of time spent doing each activity listed (television, video games, DVD, and computer/internet).

The players were given approximately three weeks to complete the survey. A total of 9 surveys were collected. Following the collection of the surveys, the nutrition information was put into SuperTracker, an online calorie intake tracker. In order to make a profile, an age, weight, height, and average activity level needed to be input. An average of each of these was taken and put into the system. The players had an average age of 15 years old, average height of 5 feet and 7 inches, average weight of 140 pounds, and averaged 30-60 minutes of moderate activity per day. With this information, SuperTracker determined 2800 calories was the appropriate allowance of daily calories.

Each player was designated a set week on the calendar. The nutrition section for one player was omitted due to not enough data, however, the other three sections for the same player were still recorded. After all the nutrition data was input as accurately as possible, two reports were examined: the Food Groups and Calories Report and the Nutrients Report. On these reports, food groups, calorie intake, and nutrients were reported as either "OK", "Under", or "Over". All of this information was transferred to an Excel spreadsheet. Also included in the Excel spreadsheet was the average amounts of daily exercise, sleep, and screen time.

Results

The results of the study are shown in the following tables:

Table 1a: Results of Food Groups, Calories, and Nutrients Reports

A	Whole Grains	Refined Grains	Dark Greens	Red & Orange	Peas & Beans	Starchy	Other	Whole Fruit	Fruit Juice	Milk & Yogurt	Cheese	Seafood	Meat/Poultry/Eggs	Nuts/Seeds/Soy
Week 1	Under	Over	Under	Under	OK	Under	Under	x	x	x	x	Under	x	x
Week 2	Under	OK	Under	Under	Under	Under	Under	x	x	x	x	Under	x	x
Week 3	Under	Over	Under	Under	Under	Under	Under	x	x	x	x	Under	x	x
Week 4	Under	Over	Under	Under	Under	Under	Under	x	x	x	x	Under	x	x
Week 5	Under	OK	Under	Under	Under	Under	Under	x	x	x	x	Under	x	x
Week 6	Under	Over	Under	Under	Under	Under	Under	x	x	x	x	Under	x	x
Week 7	Under	Over	Under	Under	Under	Under	Under	x	x	x	x	Under	x	x
Week 8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	*	*	*	*	N/A	*	*
Week 9	Under	OK	Under	Under	Under	Under	Under	x	x	x	x	Under	x	x
		37.5% OK			12.5% OK									
	100% Under	62.5% Over	100% Under	100% Under	87.5% Under	100% Under	100% Under					100% Under		

Table 1b: Results of Food Groups, Calories, and Nutrients Reports *Cont…*

A	Limits	Added Sugars	Saturated Fat	Total Calories	Protein	Protien %	Carbs	Carbs %	Dietary Fiber	Total Fat	Saturated Fat	Linoleic Acid	LA %	Cholesterol	Calcium
Week 1	Under	OK	OK	Under	OK	OK	OK	OK	Under	OK	Over	Under	OK	OK	Under
Week 2	Over	OK	OK	Under	OK	OK	Under	Under	Under	Over	Over	OK	Over	Over	Under
Week 3	Over	Over	Over	Over	OK	OK	OK	OK	Under	OK	Over	OK	OK	OK	Under
Week 4	Under	OK	Over	Under	OK	OK	OK	Under	Under	Over	Over	OK	OK	OK	Under
Week 5	Under	OK	OK	Under	Under	OK	OK	OK	Under	Under	OK	Under	OK	OK	Under
Week 6	Under	OK	OK	Under	OK	OK	OK	OK	Under	OK	Over	Under	OK	OK	Under
Week 7	Under	OK	OK	Under	OK	OK	OK	OK	Under	OK	OK	OK	OK	OK	Under
Week 8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Week 9	Under	OK	OK	Under	OK	OK	Under	Under	Under	Over	Over	OK	Over	OK	Under
	75% Under	87.5% OK	75% OK		87.5% OK	100% OK	75% OK	62.5% OK		50% OK	25% OK	62.5% OK	75% OK	87.5% OK	
	25% Over	12.5% Over	25% Over	87.5% Under	12.5% Under		25% Under	37.5% Under	100% Under	37.5% Over	75% Over	37.5% Under		12.5% Over	100% Under
				12.5% Over							12.5% Under		25% Over		

Table 1c: Results of Food Groups, Calories, and Nutrients Reports *Cont…*

A	Potassium	Sodium	Copper	Iron	Magnesium	Phosphorus	Selenium	Vit A	Vit B6	Vit B12	Vit C	Vit D	Vit E	Vit K	Folate	Thiamin
Week 1	Under	Over	OK	OK	Under	OK	OK	Under	OK	OK	OK	Under	Under	Under	Over	OK
Week 2	Under	Over	Under	Under	Under	Under	OK	Under	Under	OK	Under	Under	Under	OK	Under	Under
Week 3	Under	Over	OK	OK	Under	OK	OK	Under	OK	OK	Under	Under	Under	OK	OK	OK
Week 4	Under	Over	OK	OK	Under	Under	OK	Under	OK	OK	Under	Under	Under	Under	OK	OK
Week 5	Under	OK	Under	OK	Under	Under	OK	Under	Under	OK	Under	Under	Under	Under	OK	OK
Week 6	Under	Over	OK	OK	Under	Under	OK	Under	OK	OK	Under	Under	Under	Under	OK	OK
Week 7	Under	Over	OK	OK	Under	Under	OK	Under	OK	Under	OK	Under	Under	OK	OK	OK
Week 8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Week 9	Under	Over	Under	Under	Under	Under	OK	Under	Under	Under	Under	Under	Under	OK	Under	OK
		12.5% OK	50% OK	75% OK		25% OK	100% OK		62.5% OK	75% OK	25% OK			50% OK	62.5% OK	87.5% OK
	100% Under	87.5% Over	50% Under	25% Under	100% Under	75% Under		100% Under	37.5% Under	25% Under	75% Under	100% Under	100% Under	50% Under	25% Under	12.5% Under
															12.5% Over	

Table 1d: Results of Food Groups, Calories, and Nutrients Reports *Cont…*

A	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX
	Magnesium	Phosphorus	Selenium	Vit A	Vit B6	Vit B12	Vit C	Vit D	Vit E	Vit K	Folate	Thiamin	Riboflavin	Niacin	Choline	Zinc
Week 1	Under	OK	OK	Under	OK	OK	OK	Under	Under	Under	Over	OK	OK	OK	Under	OK
Week 2	Under	Under	OK	Under	Under	OK	Under	Under	Under	OK	Under	Under	Under	OK	Under	Under
Week 3	Under	OK	OK	Under	OK	OK	Under	Under	Under	OK	OK	OK	OK	OK	Under	OK
Week 4	Under	Under	OK	Under	OK	OK	Under	Under	Under	Under	OK	OK	OK	OK	Under	OK
Week 5	Under	Under	OK	Under	Under	OK	Under	Under	Under	Under	OK	OK	OK	OK	Under	Under
Week 6	Under	Under	OK	Under	OK	OK	Under	Under	Under	Under	OK	OK	OK	OK	Under	Under
Week 7	Under	Under	OK	Under	OK	Under	OK	Under	Under	OK	OK	OK	OK	OK	Under	Under
Week 8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Week 9	Under	Under	OK	Under	Under	Under	Under	Under	Under	OK	Under	OK	Under	OK	Under	Under
		25% OK	100% OK		62.5% OK	75% OK	25% OK			50% OK	62.5% OK	87.5% OK	75% OK	100% OK		37.5% OK
	100% Under	75% Under		100% Under	37.5% Under	25% Under	75% Under	100% Under	100% Under	50% Under	25% Under	12.5% Under	25% Under		100% Under	62.5% Under
											12.5% Over					

Table 2: Average Daily Exercise Results

A	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Average
Week 1	2.5	2	4	3	2 x	x	2.7
Week 2	4	2	2	2	1 x	x	2.2
Week 3	2	3.5	1	6	1	0.5	3.5	2.5
Week 4	4	7	3	1 x	x	x	3.75
Week 5	3.5	3	7	2	5 x	x	4.1
Week 6	0.5	2	1	4	3	0	1	1.642857
Week 7	2.75	3.25	3.25	8	2	3.5 x	3.791667
Week 8	2.25	2.25	2.25	2.75	2.25	3.5	5	2.892857
Week 9	3	4	5	4 x	x	x	4
								3.064153

Table 3: Average Daily Sleep Results

A	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Average
Week 1	5.5	8	10.5	8.25	7 x	x	7.85
Week 2	9	7.5	5.5	8	7.5 x	x	7.5
Week 3	9	9	9	8.5	10	9	9	9.071429
Week 4	8	10	9	9 x	x	x	9
Week 5	9	8.5	10	10 x	x	x	9.375
Week 6	9	8	5.5	7	6	5	7	6.785714
Week 7	8	8 x	x	x	x	x	8
Week 8	9	9	9	9	9	9	9	9
Week 9	8.5	8.5	6.5	8.5 x	x	x	8
								8.286905

Table 4: Average Daily Screen Time Results

	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Ave Hours
Week 1	4	5	2	8	2 x	x		4.2
Week 2	5	3	3	3	6 x	x		4
Week 3	2	3	3.5	3.5	5.5	2.5 x		3.333333
Week 4	4	7	2	2 x	x	x		3.75
Week 5	5	6	3.5	9 x	x	x		5.875
Week 6	9	4	4	0	3	5	9	4.857143
Week 7	2.5	2.5	3	3	2.75	2 x		2.625
Week 8	0	0	0	0	0	0	0	0
Week 9	3.5	4.5	3	5.5 x	x	x		4.125
								3.640608

Discussion

Tables 1a through 1d show the results of the nutrition section. Each nutrient or food group was rated either "Under", "OK" or "Over". The percentage of each rating for each category was recorded at the bottom of each column. A green box can be translated as "Good", a red box can be translated as "Not good", and a yellow box can be translated as "Intermediate".

Table 2 shows the results of the exercise section. For each week, data for each day was recorded and an average was taken. Finally, an average of the averages was calculated to be about 3.1 hours of activity per day.

Table 3 shows the results of the sleep section. For each week, data for each day was recorded and an average was taken. Finally, an average of the averages was calculated to be about 8.3 hours of sleep per day.

Table 4 shows the results of the screen time section. For each week, data for each day was recorded and an average was taken. Finally, an average of the averages was calculated to be about 3.6 hours of screen time per day.

The results of the study were quite similar compared to what the literature recommended. During the season, it is especially likely that an athlete will get at least the recommended amount of exercise because of practices, games, workouts, etc. On average, the baseball players in the study exceeded the recommended amount of daily exercise with 3.1 hours of physical activity. The players also got a sufficient amount of sleep every night, which was just around the lower end of the recommended 8 to 10

hours. The players recorded a fair amount of screen time per day. The average of 3.6 hours of daily screen time was very close to the average of daily exercise of 3.1 hours. This shows a fairly balanced amount of screen time, which is what the research ultimately recommended for teens.

The nutrition results were a bit more complex than the rest. First, the information recorded was entirely subjective to the players. Some of the players recorded vague information. The researcher had to sometimes interpret the information themselves and make assumptions about what was recorded. SuperTracker only has so many selections of food to choose from. For example, some of the players would record "French fries" as a lunch time item. In SuperTracker, the only choices that appear for that item include "Fast food fries", "French fries, fresh, deep fried", "French fries, fresh, oven baked", French fries, frozen, oven baked", "French fries, breaded or battered", and "French fries, with chili". In some cases, the player would only record "French fries", so the researcher would have to assume one of the options was the correct one depending on the other items in the meal. Also, the player could have recorded am item as "small" but that is also subjective. What is small to one person can be quite large for another person.

On average, the players did not meet many of the nutrition recommendations. The majority of the players did not consume enough carbohydrates, unlike what the research suggested. Also, all data was averaged, so not all of the data is completely accurate for every athlete in the study.

Conclusion

Overall, the results of the study did not match the hypothesis that was stated prior to the study. While many of the players did not meet nutrition recommendations, they did, however, meet recommendations for sleep and screen time, and exceeded recommendations for daily exercise. Opposing what the hypothesis stated, many of the athletes did exhibit regular sleeping patterns. Most of the players did not overuse electronics and used them in balance with their exercise habits. These results are quite similar compared to the recommendations that were discussed in the literature review. These results will be presented to the coach and players that participated in the study in hopes that it will make them more aware of their habits and their overall health in terms of daily nutrition, exercise, sleep, and screen time.

References

Gavin, M. L. (Ed.). (2013, March). How Much Sleep Do I Need? Retrieved May 02, 2017, from http://kidshealth.org/en/teens/how-much-sleep.html

Gavin, M. L. (Ed.). (2014, September). Fitness and Your 13- to 18-Year-Old. Retrieved May 02, 2017, from http://kidshealth.org/en/parents/fitness-13-18.html

Jacobs, M. (2013, September 02). The secret to teen athletes' success might be their sleep | Healthy Living. Retrieved May 02, 2017, from https://www.dallasnews.com/life/healthy-living/2013/09/02/the-secret-to-teen-athletes-success-might-be-their-sleep

Maughan, R. J. (Ed.). (2008). The Encyclopaedia of Sports Medicine Ser. : Nutrition in Sport : An IOC Medical Commission Publication, Nutrition in Sport (1). Chichester, GB: Wiley-Blackwell. Retrieved from http://www.ebrary.com

SuperTracker: My Foods. My Fitness. My Health. (n.d.). United States Department of Agriculture. Retrieved May 02, 2017, from https://www.supertracker.usda.gov/default.aspx

Wallace, K. (2015, October 06). Pediatricians to tweak 'outdated' screen time rules. Retrieved May 02, 2017, from http://www.cnn.com/2015/10/06/health/screen-time-rules-change-pediatricians/