Nutrition Analysis Software Proposal

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Technology Implementation Project

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The following is a proposal that outlines the need and process for the implementation of nutrition analysis software for Mills College Athletic Training.

**Needs of Target Population**

In order to be in peak physical condition, athletes need to have a healthy nutritional base. Exercise increases energy and nutritional demands. If an athlete does not increase dietary intake to compensate for these increased demands, performance will suffer and injuries will likely occur. Especially in the female athlete, a healthy nutritious foundation is key (Bean and Wellington, 1998, p. 1).

Female athletes are at higher risk of having nutrient deficiencies, eating disorders, body image issues, weight management problems, low bone density, menstrual irregularities, and injury associated with inadequate nutrition intake. Analyzing symptomatic or high risk female athletes is a vital component to decrease these negative side effects of participation. Computerized analysis offers health and fitness professionals an easy cost effective way of monitoring an athlete’s dietary intake (Shriver, Betts, & Wollenberg, 2013; Barrack & Van Loan, 2011).

**Problem and Causes**

Female athletes are at increased risk of having nutrient deficiencies due to low intake of needed nutrients, key nutrients being lost through menstruation, and unrealistic body image expectations. The following are the most common nutrients female athletes are deficient in:

* Calcium
* Iron
* B Vitamins
* Zinc
* Vitamin D

These nutrients are vital in order for the body to function properly. Female athletes that have very low calorie diets make it hard to get the recommended daily values of these key nutrients. It has been found that female athletes have lower consumption rates of calcium, iron, B12, and zinc than non-athletes (Fuhrman & Ferreri, 2010; Driggers, 2010, Bean & Wellington, 1998; Shriver, Betts, & Wollenberg, 2013; Barrack & Van Loan, 2011). Many of these nutrients’ recommended value increase with the addition of exercise some as much as 70%. Inadequate consumption of these nutrients has been found to decrease performance (Barrack & Van Loan, 2011).

Iron is one of the most commonly deficient nutrients in the female athlete population. One study found that 80% of the women athletes tested were iron deficient. Another study shows that by simply increasing the iron intake of athletes that are deficient, it has been proven to increase performance. A key cause of iron deficiency in women, besides low dietary intake is losing iron during an athlete’s menstrual cycle. More iron is needed to account for what is lost through menstruation (Bean & Wellington, 1998).

Menstrual irregularities can also be caused by inadequate nutrition. Bean and Wellington (1998) state that the most common causes leading to menstrual irregularities are energy restriction, eating disorders, and high training volume (p. 65). It has been suggested that runners who stop menstruating have lower bone densities than menstruating runners (p. 59). Another study found that 40% of the female collegiate runners tested were found to have lone bone mass and 66% noted that they experienced menstrual irregularities. This is 3 to 5 times higher than non-female athletes (Barrack & Van Loan, 2011).

Disordered eating can also contribute to inadequate nutrition intake. It is estimated that nearly 20% of female athletes have or have past history of eating disorders (Barrack & Van Loan, 2011). This disordered eating usually results from pressures to maintain an unrealistic body image. Modern American society values a thin female physique which puts pressure on athletes to maintain this ideal body type. This pressure can be increased in the sporting environment through coaches, teammates, and the type of sport an athlete participates in (Heffner, Ogles, Gold, Marsden, & Johnson, 2003; Barrack & Van Loan, 2011). This can lead to nutrient deficiencies and menstrual irregularities which increases the athlete’s risk of injury, including bone and soft tissue injuries (Barrack & Van Loan, 2011; Bean & Wellington, 1998).

Like disordered eating, dietary restrictions can also influence an athlete’s nutrition. Vegans and vegetarians are at an increased risk of having iron deficiency and B12 deficiencies. The B vitamins are mainly consumed by eating animal sources so deficiency in this vitamin is very common among vegetarians and vegans. Also plant sources of iron are not absorbed as readily as animal sources. It has been found that female vegetarians and non-vegetarian athletes have similar consumption rates of iron, but vegetarians are usually found to be more deficient because of the difference in absorption rates (Dorfman, 2000, pp. 19-21).

**Organization Description**

Mills College is a private women’s college in Oakland, California. The athletics department offers collegiate sports including swimming, cross country, tennis, soccer, rowing, and volleyball. Being a NCAA Division III institution, many athletes that participate in athletics at Mills College are new to this level of competition, so many are unfamiliar with the increased demands of intense physical activity that participation entails. Maintaining adequate nutrition during this time is also new to many athletes because they are not used to the increased demands from physical exertion, live on-campus with limited food choices, or are on their own for the first time so they are unfamiliar with the time and thought needed to provide nutritious meals.

Since Mills College is in the San Francisco Bay area, many of the students have some form of diet restriction whether it be gluten-free, vegetarian, or vegan. These restrictions increase the risk for students to become deficient in needed nutrients, especially if they are raw vegans. Living on-campus also restricts dietary intake because there is only one dining hall on campus, most dorms do not allow cooking in room, and grocery stores are not very accessible to students using public transportation. Mills College is also an all-women’s college which increases the risk of students having eating disorders since the students are all women and women have higher rates of eating disorders.

**Solution**

In order to counteract the increased risk of athletes becoming deficient in vital nutrients, I propose that the Mills College Athletic Training staff implement nutritional analysis software. It has been suggested that computerized nutrition analysis software

* Offers standardized results
* Quick accurate calculations
* More effective communication between the athlete and the health care professional

The only potential disadvantage of implementing a computer based analysis is that it requires computer and typing ability (Probst & Tapsell, 2005).

There are many options to choose from and many things to consider when deciding which software will be most effective in one’s practice. Professional grade software starts around 700 dollars and offers the most features out of all of the products. Most of these programs let the health and fitness professional enter in multiple individuals, are based of the USDA guidelines, and offer nutritional tracking, menu planning, and exercise tracking. The downside to these professional grade options is that most require yearly renewal fees, can be considered expensive for small budgets, and may have added features that go unused if only looking for nutrition analysis programs. These professional grade programs include Nutribase Professional, Food Processor, Nutritionist Pro, and Nutrihand.com. A quality program that is still professional grade but with a smaller price tag is Foodworks. This program offers many of the amenities the other professional software offers for around 200 dollars a month. Additional licenses can be purchased at 50 dollars apiece. This allow the health or fitness professional to download the software onto additional computers. A great benefit of this program is that it is a one-time fee, since there are no yearly renewal fees. This is a great option for individuals who want a professional grade program with a relatively low monetary commitment (Aronson, n.d., n. p.).

The second tier of programs are priced anywhere from 20 dollars up to a little under 80 dollars. According to the 2014 guide to best nutrition software the top five programs in this section include the DietMaster 2100 ($24.95), WeightMania Pro ($49.99), Nutrinote ($49.95), DietPower ($37.90), and the DietOrganizer ($19.95). This list was created based on the amenities provided, quality of nutrition information, and access to help and support. I reviewed the top ten of this guide and found that the Dine Healthy Desktop ($65.00) best fit the current needs of Mills College. This program allows users to install the program on multiple computers for no additional fee. Multiple profiles can be entered, also at no additional fee, and offers an easy to use interface (Carlsen, 2014).

The third tier consists of free apps that can be downloaded. A great benefit of these apps is that they are free so these can fit into anyone’s budget. The disadvantages from personal experience, are that these apps are not updated as regularly, make it hard to enter multiple profiles, and the reports are not as polished.

**Goals**

By implementing nutrition analysis software into the athletic training services that Mills College provides, I hope to accomplish:

* Early recognition and treatment of potential eating disorders
* Early recognition and treatment of nutrient deficiency related to unhealthy eating habits or dietary restrictions
* Prevention of injuries related to inadequate nutrition intake
* Increased performance related to inadequate nutrition intake
* Promotion of healthy eating habits

**Budget**

|  |  |  |
| --- | --- | --- |
| **Tier 1 Programs** | **Tier 2 Programs** | **Tier 3 Programs** |
| 700+ with yearly renewal fees | 20-80 dollars | Free |
| **Nutribase Professional**  **Food Processor**  **Nutritionist Pro**  **FoodWorks**  **Nutrihand.com**  **Nutribase EZ edition** | **DietMaster 2100**  **Weightmania Pro**  **Nutrinite**  **DietPower**  **DietOrganizer**  **Dine Healthy** | **Nutritiondata.com**  **Sparkpeople.com**  **Fitday.com**  **Calorieking.com** |

**Mills College Budget**

|  |  |  |
| --- | --- | --- |
| **Nutrition Analysis Program** | **Paper/Ink/supplies** | **Selection Choice** |
| 100 dollars one time investment | 50 dollar yearly limit for this project alone | Dine Healthy |

**Evaluation**

To ensure that this software implementation is meeting the goals set forth by this proposal, a yearly evaluation will be conducted. At the end of each year, a report will be created discussing the use, implementation, problems, and successes that were encountered during the year. The athletic trainers will calculate the number of analyses performed, any significant findings of these analyses, and the progress of these analyses. All athletes deemed high risk for nutrient deficiencies in the pre-participation physical exam will be required to undergo nutrition analysis and nutrition education based on the findings. Subsequent analyses will be performed to chart progress. All of this information will be included in the end of year report.

**Objectives**

The objective of implementing nutrition analysis software is to offer a stream-lined standardized analysis of at-risk athletes’ nutritional intake in order to correct deficiencies, balance energy consumption, identify disordered eating, enhance performance, decrease injury, and promote the well-being of the entire athlete.

**Plan**

We have already started ti implement this into the daily workings of the athletic training department at Mills College. During our PPE’s, we already have the students fill out a nutritional screening questionnaire. This questionnaire asks students about daily eating habits, any dietary restrictions, if they are having regular menses, and so on. We also already review this information and set up consultations with athletes that are considered high risk. We have high risk athletes fill out a three day food log and an additional questionnaire. We do not currently put the information thru nutritional analysis software, but we do simple calculations by hand and make sure they are getting all of the five food groups. We then have a follow up consultation with the athlete.

Including nutrition software in this plan would make the process more efficient, accurate, and detailed. Time taken to calculate and look over food logs would be decreased, a better understanding of an athlete’s needs would be achieved, and it would aid in the follow up consultation by giving an athlete concrete numbers.

**Activities and Timeline**

The following are the activities and timeline for the implementation of using Nutrition Analysis software:

* Purchase Software
* Learn how to use software chosen
  + Approximately two weeks depending on the software chosen and ease of use
* Identify potential high risk athletes
  + This will be done in the PPE which happens at the beginning of each season
* Do preliminary analysis
  + Athletes will conduct a three day food log
  + Insert food log into software
  + Print reports of findings
* Meet to discuss findings
* Nutrition Education based on findings
* Follow up analysis
  + Athletes will conduct a three day food log
  + Insert food log into software
  + Print reports of findings
* Meet to discuss progress
* Determine if progress was significant to discontinue analysis
* If improvement still needed return to step 6
* Draft end of year report
* Make any changes or improvements based on the end of year report

An added benefit of using a web-based program is that implementation can begin immediately once the program is downloaded and the athletic trainers learn how to use the analysis functions.

**Outcomes**

Nutrition education is a key component in helping athletes stay healthy and to perform to their best ability. A study, concerning nutrition education and how it impacts female college athletes, found that using an education program (like the one proposed) increases athletes’ knowledge of nutrition principles and helps athletes become more aware and better able to make healthy nutrition decisions on their own (Abood, Black, & Birnbaum, 2004). By incorporating nutrition analysis software into my current practice, I hope to achieve these same results.

**Impact**

Using nutrition analysis software will help revolutionize the nutrition analysis offered at Mills College. Athletes will benefit from the easy to read charts, detailed reports, and the sports medicine team will be reassured that the athlete is creating a strong nutrition foundation that can decrease injury and boost performance. This software will also decrease the workload of the Mills College athletic trainers because it helps to streamline the nutrition consultation process, chart progress effectively, and easily identify at-risk individuals. By using this software, the quality of healthcare offered to athletes at Mills College will be greatly increased which will result in better performance, fewer injuries, and healthier athletes.

**Lesson Plan/Manual**



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