

An evaluation of the “Run Fueled” nutrition education application: Component use among collegiate endurance runners

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Introduction



- The importance of consuming a level of energy that supports a competitive athlete’s training and subsequent exercise energy expenditure is emphasized by recent position and consensus papers by the Academy of Nutrition and Dietetics, American College of Sports Medicine, Female Athlete Triad Coalition, and International Olympic Committee (American Dietetic Association et al., 2009; De Souza et al., 2014; Nattiv et al, 2007).
- Collegiate endurance runners are susceptible to development of the *female athlete triad*, which is characterized by a combination of the following factors:
 - ➔ Energy deficit
 - ➔ Menstrual dysfunction
 - ➔ Decreased bone density
- Athletes have been shown to benefit from nutrition education interventions which are *individualized* and *convenient*.



- It is evident that this study contributes to the body of knowledge and supports the importance of intervention among this population.

Purpose

- To explore the overall use of the resources and components presented in the smartphone-based nutrition education application, *Run Fueled*. Specifically, the purpose was to assess the following components of the *Run Fueled* application:
- The importance of consuming adequate energy
 - Carbohydrate, protein, fat, and performance
 - Building a performance plate & hydration tips
 - Nutrient timing and bone-building nutrients

Methods

Sample:

A total of 48 male and female NCAA Division I Cross Country runners, between the ages of 1 and 22, at two universities were included.

Females

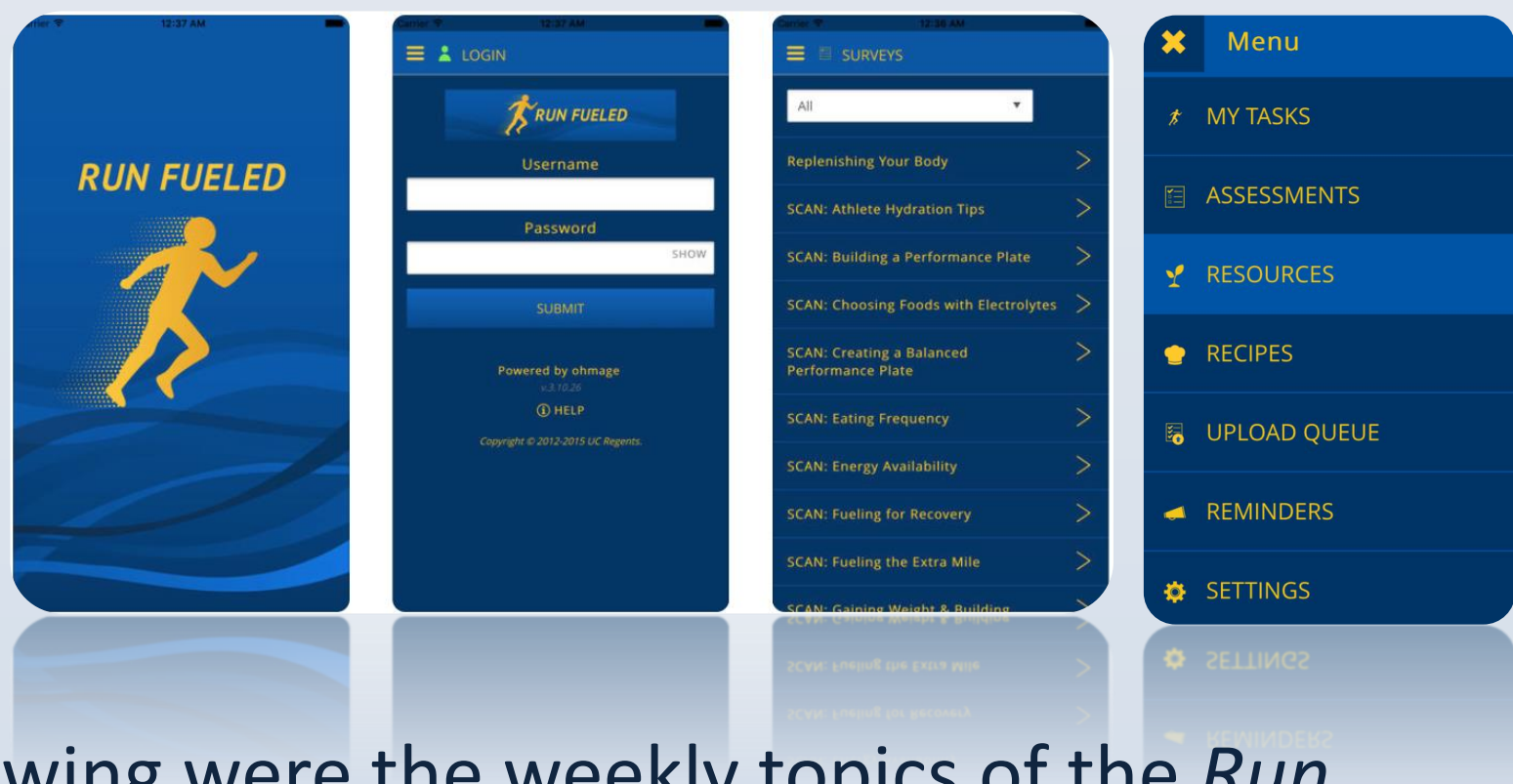
Age: 20.2 ± 0.5
BMI: 20.6 ± 0.4
Body Fat %: 20.4 ± 1.0
Weekly Mileage: 46.6 ± 4.2

Males

Age: 20.1 ± 0.3
BMI: 20.7 ± 0.3
Body Fat %: 13.8 ± 0.5
Weekly Mileage: 67.1 ± 5.2

Instruments:

- Intake survey
- Web-based nutrition screening survey
- RD consult
- Triad risk score categorization
- *Run Fueled* smartphone application



Procedure:

- The following were the weekly topics of the *Run Fueled* application evaluated for use among participants:
 - ➔ The importance of consuming adequate energy
 - ➔ Carbohydrate, protein, fat, and performance
 - ➔ Building a performance plate & hydration tips
 - ➔ Nutrient timing and bone-building nutrients
- Frequencies and mean scores of component ratings for the *Run Fueled* application were collected, summarized, and organized using descriptive statistics.
- Independent samples *t*-test, and Pearson chi square analysis were used to analyze total number of resources accessed between males and females.
- ANOVA and chi square analysis were used to analyze average number of resources accessed by each risk level.

Results

TABLE 2. Level of Triad Risk

	High Risk	Moderate Risk	Low Risk
Level of Triad Risk <i>n</i> (%)			
Female	4 (18.2)	11 (50.0)	7 (31.8)
Male		5 (20.0)	15 (60.0)
Total	4 (9.3)	17 (39.5)	22 (51.1)

Table 2. The majority of female athletes (50.0%) were categorized at moderate risk, with few classified at high risk or low risk. Among males, the majority were screened as low risk (60.0%). There were no males screened as high risk in the current sample.

Weekly Resource Trends

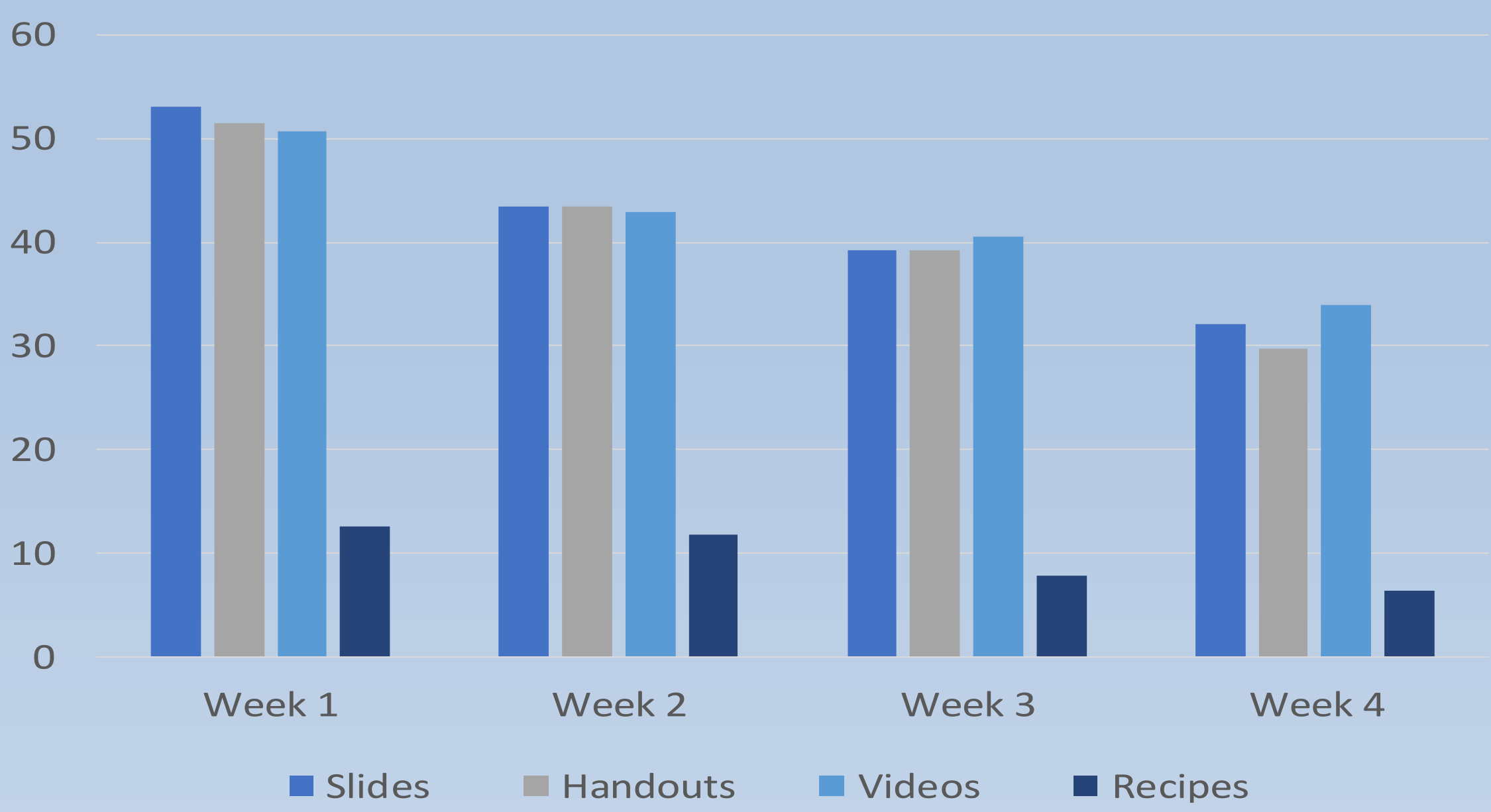


Figure 2. Resource use was markedly higher during the first 2 weeks than the last two, showing a clear decline in application usage over time.

Conclusions

- Athletes, despite their current energy status, triad risk level, or gender, may benefit from convenient nutrition education delivery such as a smartphone application since it is easily accessible and widely used (Abood et al., 2004).
- Interventions which are interactive and individualized, such as the *Run Fueled* intervention, improve dietary habits and intake, self-efficacy, and knowledge of food behaviors.
- More in-depth review of the *Run Fueled* intervention may be necessary to draw further conclusions on the useful components, especially related to the risk factors associated with the female athlete triad.

Recommendations

- Continue to market use of the application during the first 2 weeks of the intervention to reduce attrition.
- Qualitative data collection through focus group participation which discuss specific messages that appeal to and motivate distance runners may be helpful in suggesting future changes to the program, and gaining a better understanding of why application use declined significantly over time in the current study.

References

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3. De Souza, M., Nattiv, A., Joy, E., Misra, M., Williams, N., Mallinson, R... Matheson, G. (2014). 2014 Female athlete triad coalition consensus statement on treatment and return to play of the female athlete triad. Retrieved from <http://www.femaleathlete.com/triad/>
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The following results represent each tested hypothesis ($p \leq 0.05$):

- *No significant differences* were found in the mean number of resources accessed by females compared to males using independent samples *t*-test (38.2 ± 4.7 vs. 36.2 ± 5.3 , respectively, $p = 0.78$).
- There were *no significant differences* found in application usage between males and females, using Pearson Chi-square analysis ($p = 0.59$).
- *No significant differences* were found in use of the application among runners based on their level of triad risk using ANOVA (35.0 ± 12.5 vs. 34.2 ± 6.1 vs. 37.0 ± 5.3 , respectively, $p = 0.94$).
- Full use of the application:
Defined as $\geq 80\%$ of all resources accessed
 - ➔ 25.0% high-risk participants
 - ➔ 41.2% moderate-risk participants
 - ➔ 36.3% low-risk participants

- A very clear decline in application participation was observed over time.
- Overall, the slides were the type of resource viewed most frequently over the course of the 4-week intervention as compared to the video resources, handouts, or recipes.