Media Expert Eligibility of Youth Athlete Nutrition Calculator: "Smartwebcalc"

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Abstract: Proper nutrition is very important for an athlete's health. The increase in energy requirements is influenced by metabolism during athletes' exercise. Adolescent athletes' consumption habits of unhealthy food and drinks are very high. Nutrition education is very important to increase athletes' knowledge and understanding of healthy and balanced food. The web application can be used to determine the nutritional status and food intake of adolescent athletes. Study on the development of the athlete nutrition calculator "SmartWebCalc" can be used as an application that can be applied to athletes. To determine the experts eligibility in the athlete nutrition calculator media "SmartWebCalc". This was a quantitative descriptive research and an initial stage of research, namely the creation and development of the youth athlete nutrition calculator: "Smartwebcalc". The adolescent athlete nutrition calculator media contains calculations of nutritional needs and estimates of the daily menu for athletes aged 12-20 years. In this research, a media feasibility test was carried out including the main menu consisting of the home page, checking the nutrition calculator, measurement results, FAQ (Frequently Ask Questions), about Smartwebcalc, contact, logo, and nutrition and health articles involving experts at IT and Nutrition field. The data was analyzed descriptively to determine the average assessment score from expert testing. Expert validation test results on the home page in terms of interface (feasible), language (very feasible), gender in terms of interface and language (very feasible), age in terms of interface (quite feasible), language (feasible), activity in terms of interface and language (quite feasible). In the menu the measurement results in terms of interface and language (feasible), FAQ in terms of interface and language (feasible), About Smartwebcalc in terms of interface and language (very feasible), Contact in terms of interface and language (feasible), Logo in terms of interface and language (feasible), and nutrition and health articles in terms of interface and language (feasible). SmartWebCalc media as an athlete nutrition calculator is suitable for use and application to teenage athletes as an online educational media. "Smartwebcalc" is suitable for use by teenage athletes.

1 INTRODUCTION

The success of Indonesian football athletes in winning a gold medal at the 2023 Sea Games against Thailand opened the gates to achievement for the Indonesian National Team 32 years ago (Thomas, 2023). However, there were several failures for the National Team to qualify for the 2010, 2014, and 2022 AFF Cup qualifications. In the 2023-2024 AFC Cup, there was an increase in performance, namely, there were two Indonesian clubs Bali United and PSM Makassar who qualified for the AFC Cup group phase (Nurikhsani, 2022).

Nutritional intake is very important for an athlete's health. The increase in energy requirements is influenced by an increase in metabolism during athletes' exercise. Proper nutritional intake really helps athletes improve performance (Saura et al., 2019). The nutritional status and knowledge of soccer athletes are in the low category at 56.7% and 53.3% (Putri, 2017). Only 40% of athletes can meet daily energy needs, while 60%, 87%, and 40% fall into the category of lacking protein, fat, and carbohydrate needs. Apart from that, athletes' HB levels tend to be low at 16.67%, there is a decrease in iron intake by 20% and vitamin C by 37% (Afriani & Puspaningtyas, 2019; Puspaningtyas et al., 2019).

The incidence of dehydration in athletes is relatively high, especially in teenagers at 90%. SSB athletes in Semarang City experienced at least 10.6% dehydration and 89.4% significant dehydration (Putriana & Dieny, 2014; Arnaoutis et al., 2013). Excessive

sweat production along with fluid consumption in inappropriate amounts nd types can cause a decrease in athlete performance (Atashak & Sharafi, 2013; Prado et al.,2012).

Dehydrated athletes can experience increased anxiety, which results in unstable blood pressure and pulse. Consuming fluids containing carbohydrates and vitamin C can help reduce heart rate and anxiety. Athletes who lack fluids can experience unstable psychological conditions (Afriani et al., 2016; Afriani et al., 2017). Another study shows that high uric acid levels in adolescent soccer athletes are correlated with a lack of fluid consumption (Puspaningtyas & Afriani, 2020). Athletes need appropriate nutritional support based on the amount, type, and timing of their training.

Adolescent athletes often experience malnutrition problems because they have unhealthy eating and drinking habits and often choose to consume sugary drinks (Sari et al., 2018). Many facts state that adolescent athletes do not understand the amount of energy needed and how to choose the right nutritional intake. The Athlete Food and Fluid Intake Disc (CAMCA) is one of the educational media that has been developed to help athletes understand the proper distribution of food. This disc was created to calculate athletes' nutritional needs based on their age and activity level, as well as the total portion they must consume each day (Afriani et al., 2022).

Expert test results show that CAMCA can help athletes understand their nutritional needs and daily food portions (Afriani et al., 2022). Studies on disc acceptance have also been conducted on athletes; most athletes are interested in discs that have already been developed. However, there is a need to develop educational media that is more accessible and easy to use via mobile media. Web-based applications are one of the media that can be created for athletes.

According to several studies, web applications to determine children's nutritional status help parents decide what their children should eat and their nutritional status (Rachmaliany et al., 2017; Murti, 2012). Other research shows that the use of online educational media can increase teenagers' knowledge (Andesty, 2021). SMART WebCalc, CAMCA's educational media innovation, is a web application that will be developed. This application is a "Youth Athlete Nutrition Calculator" which can be used to see the nutritional needs of teenage athletes. This application is expected to help athletes find out their daily needs, be easy to use, and be attractive to teenage athletes. This media provides information that is easier to understand about how to calculate nutritional needs and fulfill athletes' nutritional intake based on their age,

gender, and activity status. Therefore, it is necessary to study the development of SMART WebCalc, "Youth Athlete Nutrition Calculator", which functions as an educational medium for teenage athletes.

2 METHODS

This research is quantitative and descriptive. This research is research in the initial stages, namely the creation and development of the Youth Athlete Nutrition Calculator: "Smartwebcalc". Smartwebcalc media can be accessed via the link https://smartwebcalc.com/. The adolescent athlete nutrition calculator media contains calculations of nutritional needs and estimates of the daily menu for athletes aged 12-20 years. The "Smartwebcalc" media is an educational media for youth athletes that is easy to access, does not require installation via cellphone media, and is easy to use.

The "Smartwebcalc" media developed can provide easy-to-understand information to provide an overview of athletes' daily nutritional needs according to their needs. In this research, a media feasibility test was carried out including the main menu consisting of the home page, check the nutrition calculator, measurement results, FAQ (Frequently Ask Questions), about Smartwebcalc, contact, logo, and nutrition and health articles involving experts at in the field of IT and Media, namely Mrs. Arum Kurnia Sulistyawati, S. Kom., M.Eng. from the Information Systems Study Program, Respati University, Yogyakarta and Mrs. Endri Yuliati, S.Gz., MPH, who is an expert in the field of Nutrition Media Development from the Nutrition Study Program, Faculty of Health Sciences, Respati University, Yogyakarta.

The data was analyzed descriptively to determine the average assessment score from expert testing. After carrying out the expert test, the researcher made revisions according to input from experts regarding the suitability of the Disc Media used. This research was carried out after receiving Ethical Clearance from the Respati University Yogyakarta Research Ethics Commission with number: 072.3/FIKES/PL/V/2023.

3 RESULTS AND DISCUSSION

This research begins with the process of creating and developing Smartwebcalc media. This media contains the home page (Figure 1.), nutrition calculator (Figure 2.), About Application (Figure 3.) and Contact (Figure 4.)

Figure 1. Home Page Before Revision

Figure 2. Nutrition Calculator Page Before Revision

Figure 3. About Application Page Before Revision

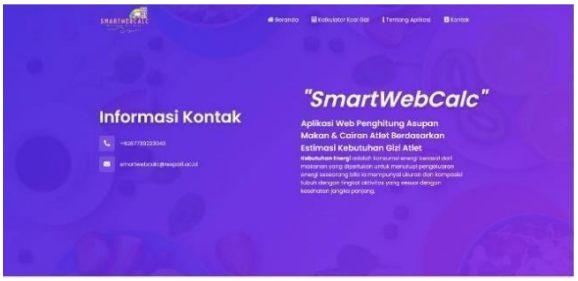

Figure 4. Contact Page Before Revision

Table 1. These are the results of expert validation on Smarwebcalc media carried out by 2 experts

Table 1. Expert Validation Results on Smartweblac

Menu	Score (Mean±SD)	
	Interface	Language
Home page	4,0±1,41	4,5±0,70
Nutrition (Kcal) Calculator Check		
a. Gender	4.5±0,70	4,5±0,70
b. Age	3,5±0,70	4,0±0,00
c. Activity	3,5±0,70	3,5±0,70
Measurement results	4,0±1,41	4,5±0,70
FAQ	4,0±0,00	3,5±0,70
About Smartwebcalc	4,5±0,70	4,5±0,70
Contact	4,0±1,41	4,5±0,70
Logos	4,0±0,00	4,0±0,00
Nutrition and Health articles	4,0±0,00	4,0±0,00

Based on Table 1, it is known that the results of the expert validation test on the home page in terms of interface (feasible), language (very feasible), gender in terms of interface and language (very feasible), age in terms of interface (quite feasible), language (feasible), activity in terms of interface and language (quite decent). In the menu the measurement results in terms of interface and language (feasible), FAQ in terms of interface and language (feasible), About Smartwebcalc in terms of interface and language (very feasible), Contact in terms of interface and language (feasible), Logo in terms of interface and language (feasible), and nutrition and health articles in terms of interface and language (feasible).

Menu	Pakar 1	Pakar 2
1. **Home page**	Sudah bagus	When you read the title, what do you think about the indicators, and how much? But after that, it turned out there was no information regarding how much. It would be better if the image icon could be clicked to provide information regarding "how much" In sports nutrition, does "liquid" only mean milk and sports food? Because there are no other indicators of drinking water, for example, plain water.
2. **Nutrition Calculator (Kcal) Check**	Sudah bagus	The words “estimate athlete energy needs” feel odd. It's best to just put it at the beginning as "to help determine estimated needs..."
d. **Gender**	Cukup jelas	Cukup jelas
e. **Age**	Rentangnya mungkin lebih diperluas lagi agar dapat menjangkau segala usia.	Is the application limited to only 20 years of age? If so, it can be added to the initial information so that users know from the start/are not disappointed at the end (want to check but can't).
f. **Activity**	Jenis aktivitas mungkin lebih beragam lagi.	Does an athlete understand “normal” vs “active” activities? If not, you can provide information regarding the explanation of both. Apart from that, do all sports have the same level of activity?
3. **Measurement results**	Cukup jelas	When viewed using a laptop, the menu writing is unreadable, but when viewed using a cellphone, it's not a problem. Icons for staple foods, etc. should be clickable, and then information regarding what the exchange is and how much is provided. For fluids, is it only milk and sports food?
4. **FAQ**	Flexible and can be adjusted if there are further application developments/updates.	How can you consider nutritional status, training duration, etc. in estimating an athlete's nutritional needs when during the assessment (menu no. 2) there were no questions related to this? One additional FAQ is needed regarding: can this application be used to calculate nutritional needs for ordinary people/non-athletes?
5. **About Smartwebcalc**	Pretty Good	Pretty Good
6. **Contact**	It is clear	If possible, such a form can be added. So users can directly send messages if they want to contact the web developer.
7. **Logos**	The text "Athlete Nutrition Calculator" is slightly enlarged.	Quite interesting
8. **Nutrition and Health articles**	Flexible and can be adjusted if there are	Quite good.

	application further developments/updates.	Can be expanded even more. If there are many, a "search" button needs to be provided so that it is easier for users to find the articles they want.
Menu	Pakar 1	Pakar 2
9. **Home page**	Sudah bagus	When you read the title, what do you think about the indicators, and how much? But after that, it turned out there was no information regarding how much. It would be better if the image icon could be clicked to provide information regarding "how much" In sports nutrition, does "liquid" only mean milk and sports food? Because there are no other indicators of drinking water, for example, plain water.
10. **Nutrition Calculator (Kcal) Check**	Sudah bagus	The words “estimate athlete energy needs” feel odd. It's best to just put it at the beginning as "to help determine estimated needs..."
g. **Gender**	Cukup jelas	Cukup jelas
h. **Age**	Rentangnya mungkin lebih diperluas lagi agar dapat menjangkau segala usia.	Is the application limited to only 20 years of age? If so, it can be added to the initial information so that users know from the start/are not disappointed at the end (want to check but can't).
i. **Activity**	Jenis aktivitas mungkin lebih beragam lagi.	Does an athlete understand “normal” vs “active” activities? If not, you can provide information regarding the explanation of both. Apart from that, do all sports have the same level of activity?
11. **Measurement results**	Cukup jelas	When viewed using a laptop, the menu writing is unreadable, but when viewed using a cellphone, it's not a problem. Icons for staple foods, etc. should be clickable, and then information regarding what the exchange is and how much is provided. For fluids, is it only milk and sports food?
12. **FAQ**	Flexible and can be adjusted if there are further application developments/updates.	How can you consider nutritional status, training duration, etc. in estimating an athlete's nutritional needs when during the assessment (menu no. 2) there were no questions related to this? One additional FAQ is needed regarding: can this application be used to calculate nutritional needs for ordinary people/non-athletes?
13. **About Smartwebcalc**	Pretty Good	Pretty Good
14. **Contact**	It is clear	If possible, such a form can be added. So users can directly send messages if they want to contact the web developer.
15. **Logos**	The text "Athlete Nutrition Calculator" is slightly enlarged.	Quite interesting

16. **Nutrition and Health articles**	Flexible and can be adjusted if there are further application developments/updates.	Quite good. Can be expanded even more. If there are many, a "search" button needs to be provided so that it is easier for users to find the articles they want.

Table 2. Expert Assesment on "Smartwebcalc" Media

Expert 1: Overall, the Smartwebcalc application is useful for community activities, especially for calculating athletes' food and fluid intake based on the Estimated Athlete's Nutritional Needs. I am satisfied with the Smartwebcalc application and have the desire to continue using this application. The Smartwebcalc application already has adequate menus and functions, so no improvements are needed unless there is an update/further application development then the menus can adjust to the application development.

Expert 2: "The application is very helpful for measuring nutritional status in athletes, but there is a perception that arises when using this application, that it can be used for all ages. Only up to 20 years. Is the purpose of the application just to provide a means for athletes to calculate nutritional needs or is it more than that? For example, developers also want to know who is using the application, who has entered data, etc.. If yes, it means a user needs to log in to the application first so that the data is captured by the developer."

"There needs to be an explanation regarding who can use this application in the initial appearance of the application. There is also a need for a contact form that is easier for users. Apart from that, icons for images of staple foods, side dishes, etc. can be further optimized to provide more information, for example, the exchange and URT.

The following are revisions after getting expert input on the home page (Figure 5.), nutrition calculator, (Figure 6.), About Application (Figure 7.) and Contact (Figure 8.

Figure 5. Home Page After Revision##

Figure 6. Nutrition Calculator Page After Revision

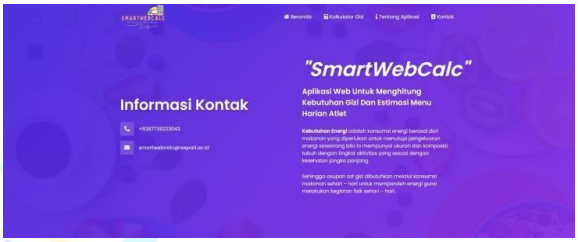

Figure 7. About Application Page After Revision

Figure 8. Contact Page After Revision

An athlete needs balanced nutrition to maintain stamina during training and competition (Indonesian Ministry of Health, 2013). However, many athletes do not understand the benefits of proper food and drink intake to improve their performance. Many athletes also don't know about nutrition, and they still don't understand the types of nutrients needed to support their performance (Merawati et al., 2019).

Nutrition education can help athletes understand balanced nutrition (Waryana and Wijanarka, 2013). There is evidence that health education about food intake and physical activity can significantly increase a person's knowledge (Oliveira et al., 2022). Media need to help students learn nutrition. Educational media can help respondents understand better (Lazzeri et al., 2013; Fitriani, 2011)

Writing titles and font selection, as well as layout in developing educational media, are important. Apart from that, simple grammar and attractive colors increase the level of acceptance of educational media (Wijayati, 2018). Color is a medium that can attract attention to visit certain sites, to persist in reading the information content, or so that visitors understand what is being conveyed

(Mahmudah, 2021). The use of media in the learning process has uses, including clarifying messages, overcoming limitations of space, time, energy, and sensory abilities, and enabling independent learning. Use media by focusing attention, and concentrating well to understand the nutritional information they are looking for. Fun learning causes the growth of positive responses which directly impacts increasing interest in learning (Mahmudah, 2021).

Creating educational media so that it is easier for the senses to understand what is being conveyed (Kapti, 2016). The easier it is to access the internet via computers, laptops, smartphones, or other devices, the more web-based learning media can be developed. Variations in learning using web media make study time more efficient. The facilities on the website are utilized as well as possible because they help learning, especially distance learning, such as the availability of comment columns and discussion forums (Faradanti, 2020). In line with previous research, learning in a web setting can increase student interest as a situational factor supporting motivation (Priyambodo, 2012).

Another study states that there is an influence of the use of website-based learning media on students' cognitive learning outcomes. The use of website- based learning media can be implemented in a productive learning process (Rahman, 2014). Web- based learning removes the barriers set by time and distance, learning through web-based tools is better than conventional learning. Web-based learning can be fun learning and has a high element of interactivity. Apart from that, the use of Android-based interactive multimedia is effectively used as an effort to improve students' cognitive learning outcomes according to collaborative journals in terms of the high level of learning independence. The results are very high, collaborative ability in terms of the level of learning independence (Firmansyah, 2023; Meduri, 2022).

Based on expert input, "Overall, the Smartwebcalc application is useful for community activities, especially for calculating athletes' food and fluid intake based on the Estimated Athlete's Nutritional Needs. I am satisfied with the Smartwebcalc application and have the desire to continue using this application." Apart from that, the overall recommendation for improvement is that the Smartwebcalc application already has adequate menus and functions, so no improvements are needed unless there is an update or further development of the application, then the menus can customize the application development.

3 CONCLUSION

Smartwebcalc media is a very interesting media and is worthy of being developed and applied to teenage athletes because it is easy to use, practical, and easy to apply. There is a need for further development regarding the application of Smartwebcalc media to help increase athletes' knowledge and understanding.

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