The Development of an Educational Video on Sports Nutrition for Silat Athletes in Malaysia

Nur Athirah Mohd Zin¹, Muhamad Ashraf Rostam^{1,2*}

¹Department of Nutrition Sciences, Kulliyyah of Allied Health Sciences, International Islamic University Malaysia, Pahang, Malaysia ²Food Security and Public Health Nutrition Research Group (FOSTER), Kulliyyah of Allied Health Sciences, International Islamic University Malaysia, Pahang, Malaysia

ABSTRACT

Keywords: sports nutrition; silat athletes; educational video

Background: Possessing sound knowledge of sports nutrition will influence optimal daily nutritional intake thus producing ideal athletic performance, especially during competitions. Educational videos are effective tools to increase knowledge about sports nutrition. However, limited resources are available that fit exclusively to our Malaysian athletes, particularly in Silat. Methods: A sports educational video was developed which focused on the required dietary intake for competition day, emphasizing the importance of practicing nutrient timing at every game window. The first draft of the video was evaluated in terms of suitability, understandability, and actionability. The Suitability Assessment of Materials (SAM) was completed by experts to identify the suitability of the video contents for Silat athletes as the target population. Meanwhile, Silat athletes were recruited to evaluate the understandability and actionability of the video. They were required to determine if they could understand and act on the information from the video. Results: The video with a duration of 6 minutes and 56 seconds was produced to match the unique demands of Silat Olahraga competitions, offering dietary recommendations specifically for Silat athletes. The final total score for suitability evaluation was 86 percent which indicates that the educational video is considered superior material for the suitability assessment of educational content. Meanwhile, the understandability evaluation yielded a score of 367 points out of a possible 372 points, resulting in a percentage of 99 percent. For actionability, the score was 92 out of 93 points, yielding a percentage of 99 percent. Conclusion: The evaluation findings from experts and targeted respondents among Silat athletes concluded that the newly developed nutritional education video is suitable for use and has an acceptable level of understandability and actionability.

INTRODUCTION

Silat, or traditional martial arts, is well known in Southeast Asia, including Indonesia, Brunei, Philippines, Singapore, and Malaysia. It is one of the most significant cultural heritages in Malaysia as well as Nusantara Indonesia. In 2019, it gained acknowledgment from the United Nations Educational, Scientific, and Cultural Organization (UNESCO) and was enlisted as an intangible cultural heritage of our country, Malaysia (Yulisman, 2019). As Silat is a form of combative sport used to have intermittent or high-intensity training, greater carbohydrate consumption among athletes is always relevant to provide extra strength and increase muscle glycogen production.

Throughout prolonged and intense training activities, higher carbohydrate intake is a must according to the specific recommended intake for athletes to overcome the reduction of glycogen storage. In the context of Seni Silat Gayung Fatani Club, coaches will plan multiple training activities for their athletes as preparation before competing tournaments (H. Mohd Ariff, personal communication, December 5, 2023). Various types of comprehensive training must be completed with a duration of at least six months before the date of the competition. The effectiveness of prolonged training was proven in a study to make Silat exponents able to develop the highest strength during performance (Shapie et al., 2022). Therefore, proper dietary intake is essential to support this type of lifestyle.

*Corresponding author. E-mail address: ashrafrostam@iium.edu.my

Sports Nutrition Knowledge

Nutrition knowledge helps athletes make optimal choices for their diet. Sports nutrition knowledge covers many aspects including food portion for athletes, meal timing and refueling, food for injuries and recovery, hydration, and fluid balance. Each of the these different aspect has significant impact on athletes not only in achieving peak sports performance but also in the process of recovering muscle and body, lowering potential injuries and exhaustion (Thomas et al., 2016). Limited knowledge on nutrition may affect unhealthy eating behaviour and increase the risk of injury (Close et al., 2019; Klein et al., 2021).

Video as an Intervention

Educational videos related to sports nutrition is an effective platform to instill proper dietary practices among athletes (Brame, 2016). Videos have become a preferable platform for providing information and knowledge as they have a considerable potential to capture a broader audience (Tuong et al., 2014). It can easily be accessed by the audience, whether on any social media platform or online application like YouTube. Online video is fitting for educational intervention methods as one research study by Juhong et al., (2023). Nevertheless, there are limited numbers of reliable and factually correct educational videos found on the YouTube platform. According to a study that examined the reliability and quality of sports nutritional videos on YouTube, among 114 videos, only 22.8 percent of them had evidence-based knowledge of nutrition information, while the remaining videos were associated with misbelief, anecdotal, personal experience, and not supported by evidence. The majority of videos were presented by non-professional persons while the videos that contained the correct and reliable nutrition information regarding sports were delivered by dietitians, athletes and trainers, and other sports nutrition professionals (Kiss et al., 2023). Furthermore, there is a limited number of sports nutrition videos that fits exclusively for Malaysian athletes, particularly in the area of Silat. Therefore, this research is conducted to develop a suitable, understandable, and actionable educational video for the use of Malaysian Silat atheletes.

MATERIALS AND METHODS

Research Design

This study was designed to develop an educational video and validate its contents. The sports educational video was developed using CapCut and Canva. The contents of the video were based on credible and reliable sources such as journals and research articles. The topic of the video was the dietary intake for competition day emphasising the importance of practicing nutrient timing at every game window. The video draft was then evaluated in terms of suitability, understandability, and actionability.

Participants

There were two different groups of population involved in this study. The first group was among a panel of six experts in nutrition and dietetics who were selected based on their academic backgrounds and working experiences. The second group was the main target viewers of this video, particularly Silat athletes of *Silat Seni Gayung Fatani* Club in Melaka. The inclusion and exclusion criteria for the field experts and targeted viewers are shown in Table 1 and Table 2, respectively.

Table 1: The inclusion and exclusion criteria for the evaluationof suitability among experts.

Category	Inclusion	Exclusion
Participants	 Experts in nutrition and dietetics Have at least two years of working experience 	Not an expert in nutrition and dietetics

Table 2: The inclusion and exclusion criteria for the evaluationof understandability and actionability among target viewers.

Category	Inclusion	Exclusion
Participants	1. Athletes aged 13-21	Athletes aged
	2. Silat athletes of Seni	below 13 years
	Gayung Fatani club	old
	3. Athletes who have	
	experience in joining at	
	least one silat competition	
	· · · · · · · · · · · · · · · · · · ·	



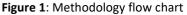


Figure 1 shows the flow chart of the research methodology.

Phase 1: Development of an educational video on sport nutrition

The educational video on sports nutrition was designed to empower Silat athletes with crucial knowledge about nutrient timing and hydration strategies tailored specifically for their sport's competitive demands. The video's content focused on key topics, including the role of macronutrients as energy sources, pre-event meals, during-event snacks, post-event recovery meals, and effective hydration strategies.

The content was meticulously developed based on a comprehensive literature review, with selected scientific articles forming the backbone of the educational material (refer to Table 5). The video embraced an engaging format, seamlessly combining voiceover explanations with visually captivating graphics created using Canva[®]. Final edits, such as sound adjustments and

the addition of subtitles, were handled using CapCut[®], ensuring the video was both professional and accessible to diverse audiences.

Recognizing the audience's linguistic preferences, the video was created in Malay, the native language of most viewers, and English subtitles were added to accommodate non-Malay speakers. English information from the literature review were translated into Malay by the researcher, who is a native speaker, ensuring accuracy, cultural relevance, and ease of understanding.

Before reaching the target audience, the video underwent a rigorous evaluation process by six experts specializing in sports nutrition and education. These experts assessed the footage on multiple dimensions: content quality, literacy demand, graphics, and cultural appropriateness. Only after their validation did the video proceed to the next stage, where respondents evaluated its understandability and actionability. By prioritizing cultural sensitivity, scientific accuracy, and viewer engagement, this educational video is a valuable tool to guide Silat athletes toward peak performance and informed nutrition practices on competition day.

Phase 2 (a): Evaluation of suitability

The Suitability Assessment of Materials (SAM) tool was utilised in this study to measure the suitability of the video in terms of video content, literacy demand, graphics, layout, learning stimulation or motivation, and the culture of the intended viewers (Doek et al., 1996). And the total number of items that would be assessed for this study is only 10 items. A panel of six evaluators consisting of two sports dietitians, one combat sports officer, and three lecturers with expertise in nutrition and dietetics reviewed the content of the educational video and evaluated it according to the online survey of SAM that had been disseminated through their email. This evaluation was carried out after they watched the educational video provided via a YouTube link, which had been shared together with the Google form link for evaluation in their email.

Phase 2 (b): Evaluation of understandability and actionability

The Patient Education Materials Assessment Tool for Audio-visual Materials (PEMAT-A/V) questionnaire was used in this study to assess the understandability and actionability of the video (Wong et al., 2019). The Patient Education Materials Assessment Tool (PEMAT) questionnaire was chosen as an assessment tool in this study. It functioned to determine whether target strength in delivering clear, actionable, and culturally respondents would be able to understand and act on relevant information tailored to the target audience.

information from the video. It is a systematic method for the evaluation of education material to test the understandability and actionability of user education materials (Shoemaker et al., 2014). They are Content, Word choice and style, Organization, Layout and design, and Use of visuals with total of 12 items. For actionability, there are 3 items assessed. To streamline the evaluation process, a WhatsApp® group named "Respondents for Educational Video" was established to gather all the respondents who volunteered to participate in this study. Then, they were provided links to watch the educational video and access the online PEMAT questionnaire to complete the evaluation process. Similarly, in Phase 2 (b), they were instructed to watch the educational video before attempting to answer the questionnaire.

RESULTS & DISCUSSION

Development of the video

The educational video entitled "Pemakanan di Hari Pertandingan" which in english means "Food for Fight Day" is aimed to provide Silat athletes with precise and reliable information on sports nutrition, emphasising the crucial role of nutrient timing on tournament day. The video with a duration of 6 minutes and 56 seconds, was meticulously designed to match the unique demands and timing of Silat Olahraga competitions, offering dietary recommendations specifically for Silat athletes. The video was structured into seven areas which are 1) introduction, 2) types of macronutrients, 3) food for before the tournament, 4) food for during the tournament, 5) food for after the tournament, 6) strategies for staying hydrated, and 7) summary. The final editing, including sound adjustments and the addition of subtitles, was completed using a video editing software, CapCut. The structure and content of the video based on each focus area is summarised in Table 5.

Evaluation of suitability assessment

The educational video received a total suitability score of 83 out of 96 points, translating to an impressive 86 percent. To calculate this, the total score was divided by the maximum possible score and then multiplied by 100 to convert it into a percentage.

According to Doak et al. (1996), materials with a percentage rating between 70 and 100 percent are classified as superior for educational suitability. This indicates that the video not only meets but exceeds the criteria for high-quality, engaging, and effective educational content. These results underscore the video's

 Table 3: Score for the suitability of educational video on content (n=6)

content (n=6)			
Question	Score	Frequency (%)	
Purpose of the video			
 The purpose is explicitly stated in 	2	5 (83.3%)	
title, or cover illustration, or			
introduction			
- The purpose is not explicit. It is	1	1 (16.67%)	
implied, or multiple purposes are			
stated			
 No purpose is stated in the title, 	0	0 (0%)	
or cover illustration or introduction			
Content about behaviours			
 The essence of the material is 	2	4 (66.7%)	
application of knowledge/ skills			
aimed at desirable reader			
behaviours rather than non			
behaviour facts			
- At least 40 percent of content	1	2 (33.3%)	
topics focus on desirable behaviour			
or actions			
- Nearly all topics are focused on	0	0 (0%)	
non behaviour facts			
Scope of the video			
- The scope is limited to and	2	4 (66.7%)	
focused on essential information			
directly related to the purpose.			
Experience shows it can be learned			
in the time allowed.			
- The scope is expanded beyond	1	2 (33.33%)	
the purpose, no more than 40			
percent is nonessential			
information. Key points can be			
learned in the time allowed.			
- The scope is far out of proportion	0	0 (0%)	
to the purpose and time allowed.			
Vocabulary used			
- All three factors: i) Common	2	3 (50%)	
words are used nearly all the time,		,	
ii) Technical concept, category, and			
value judgment (CCVJ) words are			
explained by examples, iii) Imagery			
words are used as appropriate for			
content.			
- i) Common words are frequently	1	3 (50%)	
used,	-	- (20/0)	
ii) Technical and CCVJ words are			
sometimes explained by examples,			
iii) Some jargon or math symbols			
are included.			
- Two or more factors: i)	0	0 (0%)	
Uncommon words are used,	0	0 (070)	
ii) No examples are given for			
technical and CCVJ words,			
iii) Extensive jargon			

Type of graphics		
- Both factors: (i) Simple, adult-	2	4 (66.7%)
appropriate, line		
drawings/sketches are used. (ii)		
Illustrations are likely to be familiar		
to the viewers.		
 One of the superior factors is 	1	2 (33.3%)
missing.		
 None of the superior factors are 	0	0 (0%)
present.		
Relevance of illustrations		
 Illustrations present key messages 	2	5 (83.3%)
visually so the reader/viewer can		
grasp the key ideas from the		
illustrations alone. No distractions.		
- Illustrations include some	1	1 (16.7%)
distractions.		
 Insufficient use of illustrations. 	0	0 (0%)
Factors : (i) Confusing or technical		
illustrations (non-behaviour		
related),		
(ii) No illustrations		
Captions used for graphics		
 Explanatory captions with all or 	2	5 (83.35)
nearly all illustrations and graphics.		
 Brief captions used for some 	1	1 (16.7%)
illustrations and graphics.		
- Captions are not used	0	0 (0%)
Match in logic, language, and		
experience (LLE)		
 Central concepts/ideas of the 	2	5 (83.3%)
material appear to be culturally		
similar to the LLE of the target		
culture.		
- Significant match in LLE for 50	1	1 (16.7%)
percent of the central concepts.		
- Clearly a cultural mismatch in LLE.	0	0 (0%)

Evaluation of Understandability and Actionability

The understandability evaluation of the educational video scored an impressive 367 out of 372 points, equating to 99 percent. According to Shoemaker et al. (2014), such a high percentage reflects exceptional clarity, ensuring that the material is easy for the target audience to comprehend. Similarly, the actionability evaluation achieved 92 out of 93 points, also resulting in 99 percent. As per Shoemaker et al. (2014), this high score highlights the material's effectiveness in empowering the audience to take informed actions based on the information presented. These outstanding scores underscore the video's success in delivering both accessible and actionable content, making it a powerful tool for educating Silat athletes on sports nutrition.
 Table 4: Frequency and percentage of the understandability assessment for the educational video (n=31)

ltem	Score	Responses	Frequency (%)
Unde	erstandal	bility	
	Content		
The material makes its	1	Agree	31 (100%)
purpose completely	0	Disagree	0 (0%)
evident.			
Word	Choice 8	ι Style	
-The material uses	1	Agree	30 (96.8%)
common, everyday	0	Disagree	1 (3.2%)
language.			
-Medical terms are used	1	Agree	30 (96.8%)
only to familiarize the	0	Disagree	1 (3.2%)
audience with the terms.			
When used, medical			
terms are defined.			
-The material uses the	1	Agree	30 (96.8%)
active voice.	0	Disagree	1 (3.2%)
	ganizatio		
- The material breaks or	1	Agree	30 (96.8%)
"chunks" information	0	Disagree	1 (3.2%)
into short sections.			
- The material's sections	1	Agree	31 (100%)
have informative	0	Disagree	0 (0%)
headers.			
- The material presents	1	Agree	31 (100%)
information in a logical	0	Disagree	0 (0%)
sequence.			
-The material provides a	1	Agree	31 (100%)
summary.	0	Disagree	0 (0%)
	out & De		24 (4222)
- The material uses visual	1	Agree	31 (100%)
cues to draw attention to	0	Disagree	0 (0%)
key points.	1	A	21 (1000/)
- Text on the screen is	1	Agree	31 (100%)
easy to read.	0	Disagree	0 (0%)
- The material allows the	1	Agree	30 (96.8%)
user to hear the words	0	Disagree	1 (3.2%)
clearly.	-f \/:	Aida	
	of Visual		21 (1000/)
The material uses	1	Agree	31 (100%)
illustrations and photographs that are	0	Disagree	0 (0%)
clear and uncluttered.	tionabili	+.,	
			30 (96.8%)
 The material clearly identifies at least one 	1 0	Agree	30 (96.8%) 1 (3.2%)
action the user can take.	U	Disagree	I (3.2%)
- The material addresses	1	Agree	3U (DE 00/1
the user directly when	0	Agree	30 (96.8%) 1 (3.2%)
-	U	Disagree	I (3.2%)
describing actions. - The material breaks	1	Agree	31 (100%)
	0	Agree	
down any action into	U	Disagree	0 (0%)
manageable, explicit			

Structure and Content

Focus Area	Content	Sources/References
1. Introduction	Overview of the history and background game of Silat sport in	Personal communication, H. Ariff, 29
	Malaysia such as types of training in Silat Olahraga.	December 2023
2. Type of macronutrients	 Explanation of the role of carbohydrates, protein, and fat in the body. Function of carbohydrates as the main source of energy. Function of protein is to build muscles in the body. Function of fat as a fuel source. 	
3. Pre-meal for competition	Explanation of nutrient timing for food intake before the competition.	
	 3 to 4 hours before the competition. Choose a complete and balanced meal that high in carbohydrates, moderate in protein, and low in fat. Carbohydrate feedings before exercise can help to restore glycogen stores. Examples of food such as white rice with side dishes, cereals. 1 to 2 hours before the competition. Avoid food high in fat/ protein/fiber and low glycemic index food. This food is prolonged in digestion and can disturb athletes' focus during their game. Examples of food such as carbohydrate snacks; biscuits, a slice of white bread with jam, two medium-sized bananas. 	Thomas, D. T., Erdman, K. A., & Burke, L. M. (2016). Position of the Academy of Nutrition and Dietetics, Dietitians of Canada, and the American College of Sports Medicine: Nutrition and Athletic Performance. <i>Journal of the Academy of</i> <i>Nutrition and Dietetics</i> , <i>116</i> (3), 501–528. <u>https://doi.org/10.1016/j.jand.2015.12.000</u>
4. Meal during competition	 Explanation of nutrient timing during the competition. Choose simple carbohydrates that can easily be digested Each game round includes a 1-minute break, with three rounds totalling 2 minutes of play Food that suits the game timing during the break such as mineral water, sports drinks, and fruit juice. 	Moore, D. R. (2021). Protein Requirements for Master Athletes: Do They Need More Than Their Younger Contemporaries? <i>Sports Medicine</i> , 34(S1), 1-5.
5. Post meal for competition	 Explanation of the importance of post-event meal. Application of 3R practice after game; Rehydrate, Rebuild & Refuel. Within 30 minutes after the event 	https://doi.org/10.1007/s40279-021- 01510-0

 Table 5: Content structure and references of educational videos

	 Rehydrate: Consume water and electrolyte drinks Rebuild: Consume carbohydrates and protein. Food examples such as egg sandwiches, milk Refuel: Consume complete meals within 2 hours after the game is important. To accelerate glycogen resynthesis and hasten the recovery process. 	
6. Hydration strategy for training and competition	 Essential guidelines and strategies to keep hydrated for performance and recovery during tournaments and training sessions. Strategy to keep hydrated 500 ml water, 2 hours before training 250 ml water, 15 minutes before training 250 ml water, during training or competition Four cups of water after the match which equals 800 ml 	Thomas, D. T., Erdman, K. A., & Burke, L. M. (2016). Position of the Academy of Nutrition and Dietetics, Dietitians of Canada, and the American College of Sports Medicine: Nutrition and Athletic Performance. Journal of the Academy of Nutrition and Dietetics, 116(3), 501–528. https://doi.org/10.1016/j.jand.2015.12.006
7. Summary	 Recap of key points covered in the video, reinforcing the importance of nutrient timing and hydration in optimizing athletic performance for <i>Silat</i> athletes. Importance of nutrient timing to ensure sufficient energy levels during competition. Provide negative impacts of dehydration that lead to deficient performance in training or sports performance. 	Kerksick, C. M., Arent, S., Stout, J. R., Campbell, B., Wilborn, C. D., Taylor, L., Kalman, D., Smith-Ryan, A. E., Kreider, R. B., Willoughby, D., Arciero, P. J., VanDusseldorp, T. A., Ormsbee, M. J., Wildman, R., Greenwood, M., Ziegenfuss, T. N., Aragon, A. A., & Antonio, J. (2017). International Society of Sports Nutrition position stand nutrient timing. <i>Journal of</i> <i>the International Society of Sports</i> <i>Nutrition</i> , <i>14</i> ,33. <u>https://doi.org/10.1186/s12970-017-0189-</u> <u>4</u>

CONCLUSION

It can be concluded that the newly developed nutritional education video is suitable for use and has an acceptable level of understandability and actionability.

ACKNOWLEDGEMENT

This research was not funded by any grant. The authors are grateful to all the experts and respondents from the Silat club of Seni Gayung Fatani Melaka for their contributions to this research. Their insights and feedback have significantly enriched the quality of this study.

REFERENCES

- Brame C. J. (2016). Effective Educational Videos: Principles Video Content. CBE life sciences education, 15(4), es6. https://doi.org/10.1187/cbe.16-03-0125
- Close, G. L., Sale, C., Baar, K., & Bermon, S. (2019). Nutrition for the Prevention and Treatment of Injuries Sport Nutrition and Exercise Metabolism, 29(2), 189-197. https://doi.org/10.1123/ijsnem.2018-0290
- Doak, C. C., Doak, L. G., & Root, J. H. (1996). Teaching Patients with Low Literacy Skills. AJN the American Journal of Nursing, 96(12), 16M. https://journals.lww.com/ajnonline/fulltext/1996/120 00/teaching patients with low literacy skills.22.aspx
- Juhong, J., Mordmuang, A., Jewboonchu, J., & Udomwech, L. (2022). Effectiveness of an online educational video intervention to improve the knowledge and behavior of contact lens care during the COVID-19 pandemic: A pretest/post-test design. Helivon, e11009. https://doi.org/10.1016/j.heliyon.2022.e11009
- Kiss, A. L., Sándor Soós, Ágoston Temesi, Brigitta Unger-Plasek, Lakner, Z., & Tompa, O. (2023). Evaluation of the reliability and educational quality of YouTube[™] videos on sport nutrition topics. Journal of the International Society of Sports Nutrition, 20(1). https://doi.org/10.1080/15502783.2023.2278632
- Shapie, M. N. M., Al-Syurgawi, D., Hazim Samsudin, Syahida Mohd Nazri, & Nasru Syazwan Nawai. (2022). The Physical Performance Needs in Silat Olahraga. Jurnal Performa Olahraga, 7(2), 90-97. https://doi.org/10.24036/jpo363019

Shoemaker, S. J., Wolf, M. S., & Brach, C. (2014). Development of the Patient Education Materials Assessment Tool (PEMAT): A new measure of understandability and actionability for print and audiovisual patient information. Patient Education and 395-403. Counseling, 96(3), https://doi.org/10.1016/j.pec.2014.05.027

- Thomas, D. T., Erdman, K. A., & Burke, L. M. (2016). Position of the Academy of Nutrition and Dietetics, Dietitians of Canada, and the American College of Sports Medicine: Nutrition and Athletic Performance. Journal of the Academy of Nutrition and Dietetics, 116(3), 501-528. https://doi.org/10.1016/j.jand.2015.12.006
- and Guidelines for Maximizing Student Learning from Tuong, W., Larsen, E. R., & Armstrong, A. W. (2014). Videos to influence: a systematic review of effectiveness of video-based education in modifying health behaviors. Journal of Behavioral Medicine, 37(2), 218–233. https://doi.org/10.1007/s10865-012-9480-7
- in Track and Field Athletes. International Journal of Wong, S. T., Saddki, N., & Arifin, W. N. (2019). Validity of the bahasa malaysia version of patient education materials assessment tool. Malaysian Journal of Public Health Medicine, 19, 35.
 - Yulisman, L. (2019, December 13). Martial art Silat claimed by Indonesia, Malaysia added to UNESCO's intangible heritage list. The cultural Straits Times. https://www.straitstimes.com/asia/se-asia/martialart-silat-claimed-by-indonesia-malaysia-namedunescos-intangible-cultural