

# Validity and Reliability of Shark Buoy Swimming Aid

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**Abstract** The aim of the study is to determine the value of the validity and reliability of a swimming aid innovation, which is known as Sharky Buoy. A descriptive study design was used in this study. There are five expert panels involved in this study to evaluate the content validity of the swimming aid by using a questionnaire. Result shows that the swimming aid has a high score of content validity, which is  $r = 0.81$ . Meanwhile, to measure the reliability of the swimming aid, 30 swimming coaches were chosen randomly to fill out the questionnaire according to the extent of their satisfaction regarding the swimming aid. The result shows that the swimming aid has a good score of reliability, which is 0.80. The reliability has been evaluated using a Cronbach Alpha in the SPSS. In short, the swimming aid is suitable to be used as a teaching aid to teach children how to swim effectively.

**Keywords** Validity, Reliability, Swimming Aid, Shark Buoy

## 1. Introduction

"The greatest wealth is health" and "Prevention is better than cure." These words of wisdom are enough to describe how important and valuable health to each individual. Healthy lifestyle practices are closely linked to active daily living. A healthy lifestyle can be defined as helping to improve the health and well-being of people. When we practice a healthy lifestyle, it can help improve the health of the body and at the same time it may reduce the risk of various diseases [1]. However, less than 60% of the world's population fails to reach the minimum target of moderate

physical activity of 30 minutes a day and three times a week [2].

Inactive or sedentary problems also recorded the highest percentage of 42.1% compared to other problems (Ministry of Health Malaysia, 2011). In the meantime, [3], in his study stated that there are many factors that affect human health and life starting from childhood. We do not realize it until the health problem exists. Due to that, every layer of society should emphasize a healthy lifestyle to prevent a person from experiencing long-term health problems. Today, the lifestyle of the society is very different from the past. Nowadays, people are too busy with their work where sometimes they tend to ignore their health.

This is including being too busy doing office work, watching television, playing video games and so on. This is also supported by the statement of [4] who stated that the recent popularity creates a negative nature and leads to various chronic diseases such as cardiovascular disease, cancer, diabetes, chronic lung disease and others. Lack of physical activity could lead to one's suffering from chronic diseases. When a healthy lifestyle is the priority, then the quality of life as a society will be guaranteed. This quality of life is also defined as complete satisfaction with the life and well-being of an individual.

There are many ways to stay healthy. One of them is to exercise without spending a lot of money such as jogging, doing aerobics, climbing and so on. For those who have health problems for walking and running, activities that involve water are a good solution. Nowadays, activities that involve water are gaining more popularity among the world community [6]. This is because that the activities in the water provide various benefits to the community in achieving better health and fitness, especially the elderly.

Water based activities such as swimming, water jogging,

aqua aerobics are outstanding activities in the process of maintaining the health of the community, as well as patients with chronic diseases such as heart failure [7]. Activities in the water can also reduce the risk of fear, risk of falls, joint pain and so forth. These risks may occur while doing activities on land. According to [8] from the results of his study stated that the activity of this water element can improve locomotor skills in a better direction. Locomotor skill refers to the movement of changing the position of something from one place to another.

Swimming is known as a low impact activity. It will reduce the chances of injuries to the human body. This is because when we are in the water, our weight will be reduced. So that, the injuries such as knee problems can be prevented. According to [9] in [2] stated that swimming is a good activity for the elderly because it uses less joints in the knees compared to the activities which are on land such as walking, running and other activities that need to put on some weight. According to [10], from the results of his study, swimming helps reduce fat in the body and at the same time improve the general health as well as reduce body pain.

This is supported by the statement of [9] who stated that swimming can increase flexibility, endurance, aerobic capacity, muscle strength, coordination, body composition and reduce cholesterol in the body. In addition, learning on how to swim in the early can reduce the risk of drowning. One of the biggest causes of drowning is the lack of mastering the swimming skill. Recognizing that, researchers have developed a teaching aid to enable children to learn swimming in a funny and safe way. This tool is so-called SHARK BUOY which can help parents or swimming coaches to teach children to swim. The name Shark Buoy was chosen because of the appearance is similar to a shark fin which will be worn on the back of children.

This device was formed to encourage children to be calm and confident in the water. It will make the teaching process become easily and effectively. The idea behind the device was to solve the problem of children's lack of confidence when they swim.

This tool that can grab attention of the children rather using an old-style and uninteresting way of teaching swimming techniques. Teaching children, teenagers and adults to swim has a very massive difference. The approach taken for each age group is dissimilar.

To produce this Shark Buoy, the material used is Ethylene Vinyl Acetate also known as EVA foam. This is a material that does not sink and can be in water for a long period of time. This tool is an innovation that combines few swimming aid such as swim noodle, kicking board and pull buoy to become one tool that can be used in a various way.

Every single year the number of drowning children is increasing, because children do not possess swimming skills. One of the main reasons this happens is because children do not possess swimming skills. Swimming skills

is vital to all individuals especially children. In Malaysia, countless children are not able to possess swimming skills with the exact technique compared to children abroad. Activities that involve water are a fun if all the guidelines are followed and adhered. In addition, being confident in the water plays a very important role especially among children. To gain the confidence, one needs to master swimming skills which can be used during emergencies.

In the meantime, teaching swimming skills to children requires patience, creativity, and high concentration. Therefore, researchers have developed a tool to help children stay calm and confident while in the water. Besides that, this tool can attract children to focus and learn to swim because of its shape resembles a shark fin. This is suitable for children who like to play and explore something new. This tool can be used as a floating device for children while in the water, especially in the pool. The innovation of this swimming aid will make parents and coaches easy to keep an eye on their children while in the water. Furthermore, the instructions and the manual applied are easy to understand. Researchers hope that this study can have a positive impact and can reinforce safety when children practice swimming.

According to the problem tackled in the present study and the research questions that have been raised the objective of this research is to find out about the following matters:

- To determine the validity of Assessment Instrument for the innovation device produced
- To determine the reliability of Assessment Instrument for the innovation device produced

## 2. Methodology

### 2.1. Participants

Five experts were selected to evaluate Sharky Buoy to obtain validity values. In addition, a total of 30 swimming coaches in Putrajaya have been selected to use this Sharky Buoy as a teaching aid during swimming class

### 2.2. Procedures

A set of questionnaires was provided to assess the reliability level of this Sharky Buoy. This innovation is referring to an instructional design which is known as ADDIE Model by [11]. The core elements of instructional design consist of five main criteria in producing something, namely analysis, design, development, implementation and evaluation. The first criterion is the analysis which means to determine what is taught. Design criterion is to determine the specifications, whereas development criterion is to develop and produce ingredients. The fourth criterion, application is to use the materials and fifth criterion, evaluation is to assess the validity and reliability of the innovation. The study was conducted using a

questionnaire.

Five panel experts will be given a validity assessment form to obtain the validity value based on the items in the questionnaire. In addition, the researchers also distributing a set of questionnaires to 30 swimming teachers and coaches to obtain the reliability. Once the data obtained, they were analysed using Statistical Package for the Social Sciences (SPSS) to determine the value of  $r$ .

There are three phases to collect the data namely before, during and after in planning the research process to run smoothly and systematically. Before the data collection, the researchers identified the total population of children's swimming coaches around Sultan Idris Education University and Putrajaya. The sampling and population are referred to Krejci and Morgan (1970) [12] techniques. During the data collection, the researcher acted as an observer. Researchers has brief in advance to the coaches regarding on the function and how to use the Sharky Buoy swimming. Then, they are allowed to perform activities. Upon completion, coaches were given a consent questionnaire to evaluate the Sharky Buoy swimming innovation aid.

### 2.3. Statistical Analysis

After the data collections were finished, all the data were recorded. Researchers will analyse the data descriptively using Statistical Packages for Social Science (SPSS).

## 3. Result

Based on table 1, the content validity for Shark Buoy swimming aid was  $r = 0.81$  ( $n = 5$ ). Expert 1 gave a validity value of  $r = 0.81$ . expert 2 gave a validity value of  $r = 0.78$ . expert three gave a validity value of  $r = 0.77$ . While expert four gave a validity value of  $r = 0.84$  and expert five gave a validity of  $r = 0.86$ . According to [13] a value of 0.70 is considered to have reached a high level in validity.

Based on the results of the study in table 2, it shows the overall value of Cronbach Alpha for the reliability in the questionnaire is  $r = 0.80$ . The first item is the use of Sharky Buoy on children's interest in learning, has a reliability value of  $r = 0.81$ .

The second item which is the use of Sharky Buoy on learning comprehension has a reliability value of  $r = 0.80$ . Next, the third item which is the user -friendly has a reliability value of  $r = 0.81$ . Then the fourth item which is the procedure of using Shark Buoy on children's creative and critical thinking has a reliability value of  $r = 0.79$  and the fifth item which is the use of Sharky Buoy on children's creative and critical thinking has a reliability value of  $r = 0.77$ .

Based on the value obtained, this Shark Buoy swimming aid has a high level of reliability value of  $r = 0.80$ . With the result obtained, this tool is acceptable and reliable to be used for the purpose of helping children to learn and practice swimming safely.

**Table 1.** The analysis of five experts in the field regarding the content validity

	Instructions	Component	Safety	Usage	Effect	
Expert 1	.88	.84	.76	.80	.78	.81
Expert 2	.80	.84	.74	.76	.76	.78
Expert 3	.76	.80	.78	.76	.76	.77
Expert 4	.88	.88	.80	.82	.80	.84
Expert 5	.86	.92	.84	.90	.80	.86

$r = 0.81$

**Table 2.** Cronbach alpha Reliability Coefficient Value Analysis of the use of Shark Buoy swimming aid

Component (items)	Alpha value
The use of Sharky Buoy on children's interest in learning.	.81
The use of Sharky Buoy on learning comprehension	.80
User friendly	.81
The procedures of using Shark Buoy towards creative and critical thinking of the children.	.79
The use of Sharky Buoy on children's creative and critical thinking	.77
Overall value	.80

## 4. Discussions

There were two hypotheses that were made at the beginning of the study. The first study hypothesis states that there is no significant relationship between expert evaluation scores on the use of the Shark Buoy swimming innovation tool for children's swimming learning.

The second research hypothesis is that there is no significant relationship between Cronbach alpha value and the use of Shark Buoy swimming innovation tool for children's swimming learning. Based on the data obtained the hypotheses stated by the researcher at the beginning of the study were answered.

There was no significant relationship between expert evaluation scores on the use of the Shark Buoy swimming innovation tool for children's swimming learning.

The findings of the study related to the validity of the content from the experts obtained, showed that all five experts gave a high validity value of  $r = 0.79$ . This coincides with what has been suggested by several previous researchers such as [14, 15], stating that instruments that achieve a high level of validity, are suitable for use and implementation. [13] in the study of [16] stated that a validity value of 0.70 was considered to have high validity. This has proven that the Shark Buoy swimming innovation tool is seen as a tool that can help in swimming learning to children. [17] explained that the instrument for a measurement is said to be valid when it actually measures what should be measured. While [14], stressed that a measurement has high validity if the degree of ability to measure what should be measured is high.

Therefore, the validity of this tool refers to the extent to which the tool is relevant to current learning. If the measuring instrument cannot measure the components of a field, then the measuring instrument does not have high content validity. [15] stated the validity of the content of the tool is considered good if it can measure what should be measured accurately and effectively.

The purpose of the expert evaluation performed was to obtain the validity of the content as suggested by [13]. Through the evaluation that has been conducted on the validation of the Shark Buoy swimming innovation tool, it obtained a high validity coefficient value of 0.79 and was accepted by experts. Based on the expert views on this tool, it shows that the majority of experts agree that this tool shows validity in terms of content and suitability for the proposed activities. Experts also agree that this module can be used to help children who want to learn basic swimming skills because these tools have been evaluated to be relevant by experts.

There is no significant relationship of Cronbach alpha value on the use of Shark Buoy swimming innovation tool for children's swimming learning.

The reliability of this tool is determined when the respondent is able to meet the stated objectives successfully. According to [13] the fluency of students while following each activity provided shows that the tools produced are good and have an impact on teaching and

learning. Since the findings of the study exceeded the minimum value of  $r = 0.60$ , it can be concluded that the Shark Buoy swimming innovation tool produced has a good and high level of reliability coefficient.

According to [15], if the value of the reliability coefficient obtained is high, which is at least 0.60, it means that the tool has a good level of consistency. [18] also gives the same opinion as what is explained by [15]. According to him, the closer the reliability coefficient reaches 1.0 the better. He also explained that values of reliability coefficients less than 0.60 are considered weak, while values of coefficients reaching 0.70 are acceptable, and values of coefficients above 0.80 are good.

Based on the results of the study findings obtained, the reliability coefficient is 0.80. This may explain that the device is acceptable and reliable and can be used by children to learn to swim. The process of obtaining these reliability values is in line with what researchers have done previously on their modules by [19, 20]. All reliability studies conducted by them prove that a tool must have a high value of reliability coefficient to ensure the quality and quality of research that can ultimately contribute to the effectiveness of the use of the innovation tool.

However, researchers have been able to identify some things that can be improved to make this tool better in line with the learning needs of the 21st century. Hopefully this innovative tool can be used in the future by children to learn swimming skills with fun and safety.

## 5. Conclusions and Recommendations

In conclusion, this innovative tool called Sharky Buoy is very helpful for the learning process in swimming for children. This device created, can encourage children to be calm and confident when in the water. When this can be achieved, then the teaching process can be done easily and effectively. With this tool, it is hoped that more people will have the awareness to learn to swim at a young age, and this will make children indirectly able to adopt a healthy lifestyle.

Based on the data analysis that has been elaborated in the previous chapter, the researchers found that the value of validity and reliability of the Shark Buoy innovation tool as a whole is high. This has proven that the use of the Shark Buoy innovation tool is very suitable for swimming learning to children.

Finally, researchers hope that in the future, more instruments or teaching aids such as Shark Buoy are produced and designed, not only for the process of learning to swim but also can be an effective safety tool and have a positive impact on children.

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