



Development Of Qr Code-Based Ushiro Mawashi Geri Kick Exercise Variations For Junior High School Karate Athletes

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Abstract

This study aims to improve the results of the ushiro mawashi geri kick training ability based on qr codes in karate athletes at Mtss Alwashliyah Stabat and SMP Negeri 1 Sawit Seberang through the use of pocket books accompanied by qr codes. The research location was carried out at Mtss Alwashliyah Stabat and SMP Negeri 1 Sawit Seberang. This study uses a research and development method (Research and Development) with the Sugiyono development procedure. The population in this study was 30 athletes. The small group trial sample consisted of 10 Mtss Alwashliyah Stabat athletes and the large group trial sample consisted of 20 SMP Negeri 1 Sawit Seberang athletes. The data collection technique in this development research is using a questionnaire given to experts and athletes, the data analysis technique used in this development research is quantitative descriptive statistics. The Development of Ushiro Mawashi Geri Kick Training Variations Based on QR Codes in Junior High School Karate Athletes has first been validated by experts, namely material experts, language experts, and trainer experts. The results of the validation of the product design by experts were 71%, based on the assessment, the percentage was in the range of 71% -85% and was categorized as "Feasible". The small group trial showed that the total assessment was 84%, so the percentage was in the range of 71% -85% which was categorized as "Feasible" to be tested in a large group. The validation of the product design by experts in the small group trial was 91%, so the percentage was in the range of 86% -100% which was categorized as "Very Feasible". The large group trial showed that the total assessment was 87%, so the percentage was in the range of 86% -100% which was categorized as "Very Feasible" to be used as a variation of the exercise. After carrying out repeated validation processes and comparisons between the small group trial and the large group trial, it can be concluded that the development of variations of the ushiro mawashi geri kick exercise based on qr codes for junior high school karate athletes is very feasible to use.

Keywords: Exercise Variations, Ushiro Mawashi Geri Kick, QR Code

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INTRODUCTION

Karate is one of the sports that can shape physical and mental health in the martial art of karate. Karate has many advantages, not only teaching physical aspects alone, such as fighting skills, but also emphasizing the sharpening of discipline and mental aspects. In addition, the martial art of karate is a sport of achievement that is competed in both regional and international arenas. In Karate there are two numbers that are competed, namely kata and kumite.

According to Fandayani (2019) the Ushiro Mawashi Geri kick attack technique is the second dominant technique and is clarified in the overall data with a percentage of 11%. This

happens because this kick movement is more difficult, hitting the body area is difficult to reach, however, if an athlete does the Ushiro Mawashi Geri kick quickly and accurately, this kick can produce many points because the area reached by Ushiro Mawashi Geri is the same area as Mawashi Geri, namely the area that produces three points. When kicking, it is important to pay attention to balance because when kicking, the body weight is only supported using one leg. Kicks require good balance and speed, if the attack is not done quickly and does not have good balance, the kick attack will be at risk of being anticipated by the opponent and even difficult to get points.

This study not only develops variations of ushiro mawashi geri kick training, but also introduces QR code technology as an interactive training medium, which can help athletes access training materials more flexibly. With the integration of QR codes, this study provides an alternative training method that is more modern, adaptive, and easily accessible compared to previous training models. The ability of the Ushiro Mawashi Geri kick technique in karate requires good mastery in terms of technique, speed and strength.

With the development of technology, digital-based learning methods are a potential solution in improving students' understanding and skills. One innovative approach that can be applied is the use of Quick Response (QR) Code in learning the Ushiro Mawashi Geri kick technique. By utilizing QR Code, athletes can access learning materials in the form of video tutorials, illustrations, and more interactive instructions. This is expected to help them understand the technique more deeply and train independently more effectively.

Based on the above, this study aims to develop variations of Ushiro Mawashi Geri kick training based on QR Code for junior high school karate athletes. With this innovation, it is expected to increase the effectiveness of techniques, speed, strength, and provide a more interactive and easily accessible experience for students.

The objectives of this study are: To determine the feasibility of developing variations of Ushiro Mawashi Geri kick training based on QR code for junior high school karate athletes. According to Sugiyono (2011:407) stated that the research and development method is a research method used to produce certain products, and test the effectiveness of the product. In order to produce certain products, research is used that is in the form of needs analysis and to test the effectiveness of the product so that it can function in the wider community, research is needed to test the effectiveness of the product. So research and development are longitudinal (gradually can be multi-year).

Development is a process used to develop and validate educational products. The steps of this process are usually referred to as the R&D cycle, which consists of studying research

findings related to the product to be developed, developing the product based on these findings, testing the field in the setting where it will be used finally, and revising it to correct deficiencies found in the testing submission stage. In a more rigorous R&D program, this cycle is repeated until the test data field shows that the product meets the defined behavioral objectives). (Borg and Gall, 1983: 772). The method used is the research and development method. Stated by Nusa Putra (2011:72). Development is the use of scientific or technical knowledge in order to produce new materials or substantially improved equipment, products and services for new processes or systems, prior to the commencement of commercial production or commercial application, or to substantially improve what is already being produced or used.

The concept of model development is something that describes a mindset. A model describes the entire concept that is interrelated, in other words, a model can also be seen as an effort and to concretize a theory as well as an analogy and representation of the variables in the theory. Several experts have put forward research, including Cooper in Sugiyono (2019) who stated that research is a systematic investigation process aimed at providing information to solve problems. According to (Angga et al., 2020; Masgumelar & Mustafa, 2021) Products that can be developed in physical education are very diverse and include learning media, changes in tools, learning models and evaluation tools, and other development products that are tailored to learning needs. Hakikat Olahraga Karate

Karate is a branch of martial arts from Japan. Karate can be interpreted as follows: kara = empty, horizon, and te = hand or all parts of the body that have the ability, then do = path.

Thus, karate can be interpreted as a tactic that allows someone to defend themselves with their bare hands without weapons. According to Hotliber Pangondian (2016) Karate is a martial art that requires a lot of skills and techniques and high self-confidence, in order to be able to display good and consistent play in a match. In Andibowo Teguh's research (2021) Karate is a hard martial art because it uses physical techniques such as punches, kicks, blocks and solid stances. Therefore, mastering karate techniques plays a very important role in improving good and correct skills..

According to Rangkuti (2020), the main goal of training basic karate techniques is to gain an understanding of how the body moves to produce as much power as possible with minimal effort.

According to Bermanhot Simbolon (2014: 2), karate techniques are divided into three main parts, namely; (1) Kihon, which are basic karate techniques such as punching, kicking, and blocking techniques; (2) Kata, which is a practice of moves; (3) Kumite, which is a sparring or fighting practice.

According to Sujoto J.B (1996) Almost 70% of karate techniques use kicking techniques, and the power of the kick is approximately 20 times greater than the power of the punch, the important thing to note in doing the kicking technique is to kick hard, fast, and immediately pull back to its original position.

The Ushiro Mawashi Geri kick is a half-circle back kick, one of the most difficult footwork, with this kick aiming for a high target or head target. Ushiro mawashi geri is one of the dangerous kicks but is often used in kumite matches because of its great value if this kick can hit the target correctly. During a kumite match, a person must make the right and right movements in order to get points. According to Hotliber Pangondian (2015) Kicking is very important in karate, as are hand techniques. Basically, kicks have more power than punches.

According to Fandayani (2019) the Ushiro Mawashi Geri kick attack technique is the second dominant technique and is clarified in the overall data with a percentage of 11%. This is because this kick movement is more difficult, hitting the body area is difficult to reach, however, if an athlete does the Ushiro Mawashi Geri kick quickly and accurately, this kick can also produce many points because the area reached by Ushiro Mawashi Geri is the same area as Mawashi Geri, namely the area that produces three points. According to Hotliber Pangondian (2019) the hands and feet play a very important role in achieving proficiency in karate, these hands and feet are always used in matches, so these two moves must have strong and fast movements so that the kick hits the target. To produce a precise and perfect ushiro mawashi geri kick, it must be accompanied by technical accuracy, target accuracy and speed as well as flexibility and hip rotation. Each component will affect the perfection of the ushiro mawashi geri kick, so there needs to be coordination of ankle and foot movements that are in sync and flexible so that the resulting kick can be done perfectly and right on target, starting from the horse stance or start, the kick launch stage, hip rotation, kicking the foot towards the target and the breath that is released through the mouth.

Qr Code is a matrix image that has the advantage of storing a set of data according to Prathivi (2019:37) in (viantina, et al. 2023). QR Code was developed by Densi Wave for tracking manufacturing vehicles according to Mulyana & Wijaya (2018:64) in (viantina, et al. 2023) QR Code is the result of the development of Barcode. Initially, this QR Code was used to check the tools used for manufacturing, over time it was applied to mobile phones. QR Code has the advantage of being able to open data that is larger than just data in the form of numbers and sentences. It is easy to access. By scanning using the Google feature or using a special application download on a mobile phone.

Quick Response Code is a type of matrix code or two-dimensional barcode developed by Densi Wave, a division of Denso Corporation which is a Japanese company and published in 1994 with the main functionality that it can be easily read by a scanner QR stands for quick response or fast response, which is in accordance with its purpose is to convey information quickly and get a quick response. QR Codes are able to store information horizontally and vertically, unlike barcodes which only store information horizontally, therefore QR Codes can automatically accommodate more information than barcodes.

Manfaat QR Kode di Bidang Olahraga

The use of QR Codes in learning is expected to increase the active involvement of karate athletes in the training process. In various countries, especially Japan, QR Code technology has been applied in various industries. While in Indonesia, the use of QR Codes is still not very common, but many QR scanner applications are available for free for various types of mobile phones.

Currently, QR Codes are starting to be used in the world of sports, including martial arts such as karate. QR Codes can also be used to access various learning materials, such as videos of certain exercise variations. With this utilization, athletes can easily access training references anytime and anywhere.

In a dojo or training center, QR Codes can be placed in strategic areas, such as information boards or athlete membership cards, to provide direct access to instructional videos. This makes it easier for coaches to provide additional materials and help athletes improve their technique independently. Originally developed for industry, QR Codes are now a tool that athletes and coaches can use to develop and access training materials more interactively and efficiently.

The instructions on how to use the QR Code are as follows:

1. The smartphone or smartphone that will be used must be connected to the internet network.
2. If you do not have a QR Code scanner camera, download the QR Code scanner application on the Google Playstore for Android and the App Store for IOS.
3. The scanner camera is directed at the QR Code that has been provided
4. After the shortcut link appears, click open the site/web that is displayed

METHOD

This type of research is research and development (Research and Development). According to Sugiyono (2011:297) the Research and Development (R&D) research method is a research method used to produce certain products and test the effectiveness of the product..

The method used in this study is development research that includes product development. The final result of this research and development activity is the development of a new Ushiro Mawashi Geri kick variation, equipped with product specifications, so that it can be used in making programs. Karate training and athletes are when kumite punches are more often done because the punches that are more dominant are used by athletes during kumite matches, researchers see that there are still few athletes who do Ushiro Mawashi Geri kicks. The results of interviews with Senpai trainer Faisal Yazid obtained information that the Ushiro Mawashi Geri kick variation is not trained very often and never uses a form of training variation. From observations conducted during training, athletes more often practice kizami stuki, gyaku stuki, mawasi geri, and mae geri punches. Ushiro mawashi geri training is still trained, only no variations are given.

From the results of the needs analysis from the coach, it was stated that athletes who had participated in the competition had mastered the Ushiro Mawashi Geri kick form and really wanted the development of variations of the Ushiro Mawashi Geri kick to be included in the training program so that athletes would master the Ushiro Mawashi Geri kick more. Based on the results of observations, interviews and needs analysis, it can be concluded that there needs to be a variation of the Ushiro Mawashi Geri kick training to be made into the training program.

Previous research and development of the INDAH PRIMA SEMBIRING thesis. Development of the Ashi Mawashi Kick Exercise Variation Model for Karate Kumite Athletes in 2018, the exercise variation from the previous results developed was Ashi Mawashi and the final result was a pocket book. While the research that will be conducted by the author is to develop a variation of the ushiro mawashi geri kick exercise based on qr code for junior high school karate athletes. What distinguishes the previous research from the author's research is the final result. The final result of the previous research is a pocket book, while the final result of the author's research is a pocket book in which there is a QR Code to be able to access video tutorials that are poured into Youtube. In previous research and development there are weaknesses, namely the writing in the pocket book and previous research only developed 8 exercise variations. Previous research and development have not used qr codes as a medium for athletes to be more effective in training. From the weaknesses of previous research and development, the researcher plans to develop a qr code-based exercise variation product. The

advantages of the researcher's product are that it explains how to practice the ushiro mawashi geri kick and in the video tutorial there will be an explanation and movements that will be slowed down so that athletes can see the movements properly.

According to Sugiyono (2018:409), the research and development model designs include the following:

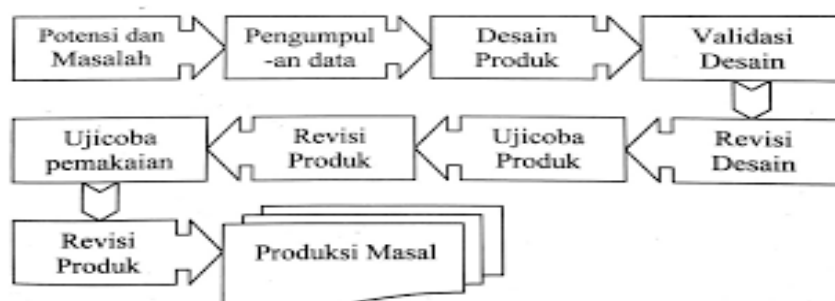


Figure1 Metode Research and Development (R&D)
(Source: Sugiyono 2018:409)

According to Sugiyono (2018:409) Research and Development includes 10 stages, namely: (1) Potential and Problems that are the background for development, (2) Data Collection needed as material for product planning to be developed, (3) Product Design, namely designing the expected product design, (4) Design Validation, namely determining the product design to be developed to be more effective and efficient, (5) Design Revision, namely improving the design based on validation results, (6) Product Trial, namely practicing the product that has been designed, (7) Product Revision, namely the product that is assessed to determine whether it still has shortcomings, (8) Usage Trial which is carried out by practicing, (9) Usage Revision, and (10) Mass product. However, this development research only uses nine stages, namely from potential and problems to usage trials. This is based on the limited costs and capabilities of researchers at the time of the research..

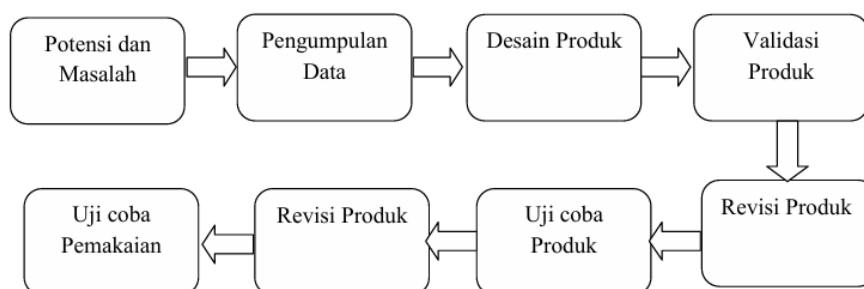


Figure. 2 Metode Research and Development (R&D)
(Source: Sugiyono 2018:409)

The steps of research and development that are modified above are, 1) Potential and problems that underlie the development, 2) Data collection, namely collecting data or information to create a concept, 3) Making a product design that will be developed by the

researcher, 4) Expert validation, revisions made by the relevant expert, 5) Design revision, namely improvements after being revised by an expert to improve the design of the product to be developed, 6) Product trial, namely carried out in the early stages to collect data and determine product feasibility, 7) Product revision, namely improving the product to be developed before being tested, 8) Usage trial, namely the use of a product that has been designed and validated by an expert.

According to Sugiyono (2020:14) data collection techniques are the most important part of a study. Using appropriate data collection techniques will result in a standard data analysis process. Inappropriate data collection will result in data taken that does not meet the established standards. According to Sugiyono (2020:193-330) data collection techniques can be carried out by means of interviews, questionnaires, observations, documentation, and triangulation. The instrument for collecting data in this development research is by using a Questionnaire.

Questionnaire is data obtained in the form of a list of questions to be answered directly by respondents. This method is suitable for obtaining large numbers of respondents' answers. Usually each question has its own category and weight to be assessed based on the answer or reason.

The instrument in this research and development is a validation sheet from expert trainers, material experts, and language experts. The expert trainer validation sheet is used to determine the feasibility of the developed training variations. The material expert sheet is used to measure the suitability of the material in the developed training variations. The language validation sheet is used to determine the feasibility of the language in the developed training variations and Questionnaires for athletes related to the products developed Suryani (2018:215-218).

RESULTS AND DISCUSSION

Result

This study aims to improve the results of the ushiro mawashi geri kick training ability by using a product in the form of a pocket book equipped with a QR Code which contains a video tutorial to access various variations of ushiro mawashi geri kick training. The small group trial was carried out on April 30, 2025 and the large group trial was carried out on May 05, 2025. The researcher conducted a trial and gave a questionnaire to 10 karate athletes from Mtss Alwashliyah Stabat 1 for the small group trial and 20 karate athletes from SMP N 1 Sawit Seberang for the large group trial. This development research uses the Sugiyono procedure which has eight stages, namely Potential and problems, collecting data, product design, design validation, design revision, product trial, product revision, usage trial.

Development of Ushiro Mawashi Geri Kick Exercise Variations Based on QR Codes for Junior High School Karate Athletes has been validated by experts in their fields, namely material experts Mr. Iwan Sahputra, S.Pd., M.Pd., language experts Mr. Dr. Surya Kelana Putra, S.Pd.I., M.Hum., M.Ag and trainer experts Mr. Faisal Yazid, S.Pd which have been revised in table 4.2. The first test was carried out after the product design was observed, corrected, and declared valid or feasible to be tested by experts. Evaluation was then carried out to improve and perfect the development of ushiro mawashi geri kick exercise variations based on QR codes for junior high school karate athletes that had been made. So the average value of the product design validation percentage by experts is 71%. Based on the description of the feasibility percentage category, the average value is in the range of 71% -85%. The product design on the development of variations of the ushiro mawashi geri kick training based on qr codes for junior high school karate athletes is declared feasible, so it can be used for the trial stage after improvement. The results of the design validation are as follows:

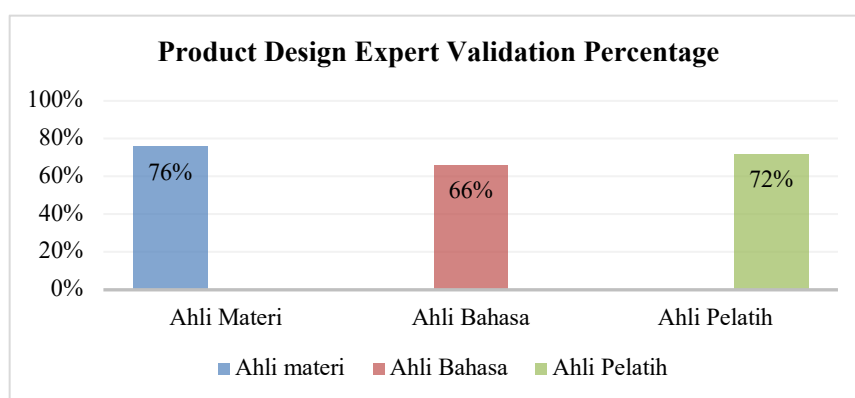


Figure 3. Product Design Expert Validation Percentage

This trial stage is that there are 10 Mtss Alwashliyah karate athletes who have conducted a small group trial on the development of variations of the ushiro mawashi geri kick training based on qr codes for junior high school karate athletes. After conducting the trial, students are then given assessment and evaluation instruments to assess the variations of the training that have been developed. The results of the small group trial presentation value are 84%. Based on the description of the feasibility percentage category, the average value is in the range of 71% -85%. The results of the small group trial are as follows:

Table 1. Results of Small Group Trial Athletes' Answers

Points Earned	Maximum Points	Presentation	Eligibility Category
43	50	86%	Very Worthy
40	50	80%	Worthy
46	50	92%	Very Worthy
41	50	82%	Worthy
40	50	80%	Worthy
40	50	80%	Worthy
42	50	84%	Very Worthy
45	50	90%	Very Worthy
40	50	80%	Very Worthy
43	50	86%	Very Worthy
Total 420	500	84%	Worthy

So the average value of the product design validation percentage by experts is 91%. Based on the description of the very feasible percentage category, the average value is in the range of 86% -100%. The product design for developing variations of the qr code-based ushiro mawashi geri kick training for karate athletes at Mtss Alwashliyah Stabat is declared very feasible. The results of the small group trial validation are as follows:

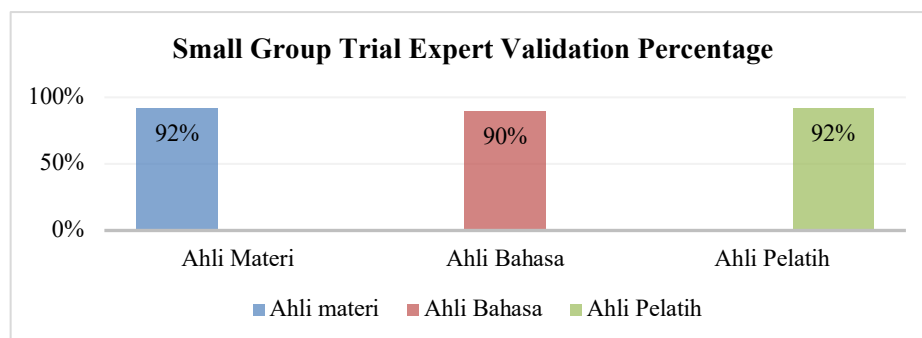


Figure 4. Product Design Expert Validation Percentage

This trial stage is that there are 20 karate athletes from SMP Negeri 1 Sawit Seberang who have conducted a large group trial on the development of variations of ushiro mawashi geri kick training based on qr codes for junior high school karate athletes. After conducting the trial, students are then given assessment and evaluation instruments to assess the variations of kick training that have been developed. The results of the presentation value of the large group trial are 87%. Based on the information on the very decent percentage category, the average value is in the range of 86% -100%. The results of the large group trial are as follows

Table 2. Results of Student Answers in Large Group Trials

Points Earned	Maximum Points	Presentation	Eligibility Category
45	50	90%	Very Worthy
46	50	92%	Very Worthy
46	50	92%	Very Worthy
45	50	90%	Very Worthy
45	50	90%	Very Worthy
40	50	80%	Worthy
42	50	84%	Worthy
41	50	82%	Worthy
43	50	86%	Very Worthy
44	50	88%	Very Worthy
40	50	80%	Worthy
43	50	86%	Very Worthy
45	50	90%	Very Worthy
46	50	92%	Very Worthy
43	50	86%	Very Worthy
44	50	88%	Very Worthy
43	50	86%	Very Worthy
44	50	88%	Very Worthy
43	50	86%	Very Worthy
41	50	82%	Worthy
Total 869	1000	87%	Very Worthy

Discussion

This research and development aims to produce a product in the form of a pocket book equipped with a QR code to access various variations of ushiro mawashi geri kick training for junior high school athletes. This product, in addition to being a pocket book, will also be packaged in the form of a video tutorial that can be accessed via a YouTube link connected to the QR code in the pocket book. In this way, athletes can access training materials anytime and anywhere. This video tutorial is expected to be an effective and interesting source of training, so that athletes can more easily understand and master the ushiro mawashi geri kick technique.

Based on the results obtained, it can be concluded that the development of variations of ushiro mawashi geri kick training based on QR codes for junior high school karate athletes is considered very good and worthy of being used as a form of training variation. The pocket book that is compiled contains ten variations of training, equipped with a QR code that can be accessed to view video tutorials. This facility makes it easier for athletes to remember and understand each stage of training visually and practically.

The response from athletes to this training variation is also very positive. This is because previously they practiced more often with static methods, which ultimately led to

boredom. With the presence of more dynamic and interactive training variations, athletes feel more interested and motivated to train. In addition, this variation also helps them master the ushiro mawashi geri kick more effectively.

Thus, the developed training variations not only improve athletes' skills, but are also able to increase their interest and attention during the training process.

CONCLUSION

Based on the results of the research and discussion, it can be concluded that the development of qr code-based ushiro mawash geri kick exercise variations is very feasible to be used as exercise variations. This exercise variation is effective in improving ushiro mawashi geri kicks and making them easier to understand. In addition, this qr code-based ushiro mawashi geri kick exercise variation allows athletes to practice independently with direct feedback, which makes training more efficient.

After being tested on karate dojo athletes at MTSs Alwashliyah Stabat and SMP Negeri 1 Sawit Seberang, the qr code-based ushiro mawashi geri kick exercise variation has been validated by experts, including material experts, language experts, and trainer experts. The results of the validation assessment from experts and athletes show that the product, which is a pocket book that contains a qr code containing a video tutorial for ushiro mawashi geri kick exercises, is very feasible. The experts also assessed that the book and its content were accurate and relevant to the needs of athletes. In addition, athletes gave positive responses and said that the books and video tutorials really helped them understand and practice the ushiro mawashi geri kick exercise well.

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