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The Effectiveness of Hand-Body Observation and Manipulation Methods on Taekwondo Taegeuk Learning Among Primary School Children

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Abstract

Background. A good teaching method allows better transfer of knowledge between teachers and students.

Problems and aim. Taekwondo instructors lack exposure to the variety of methods of teaching Taekwondo to children makes children not interested in participating in Taekwondo. This study aimed to examine the effectiveness of two teaching methods; observation techniques and hand-body manipulation on Taekwondo Taegeuk 3 (TT3) learning among primary school children.

Methods. The design of this study used pre- and post -test experimental research methods. The study population consisted of primary school children. A total of 40 children who are members of a Taekwondo club in Malaysia were involved in this study. All subjects followed the same pre -test session before the intervention session began. Subjects were divided into 2 experimental groups namely $N_1 = 20$ (observation), $N_2 = 20$ (hand-body manipulation) and attended 2 intervention sessions for 3 hours, to learn and practice TT3 with different methods. The selected study instrument was a TT3 score sheet. Scores before and after the test were recorded and analyzed using IBM SPSS Statistics.

Result. The results of the data analysis showed that the pre-test scores obtained by both groups were quite similar because the same activities and amount of pre-test time were given. The post-test scores showed significant differences between both groups.

Conclusion. Learning methods using observation techniques result in effective learning transfer because it saves time, subjects can witness TT3 demonstrations more often as well as teach many students.

Introduction

Teaching is an art. Challenges to individuals interested in entering the teaching or coaching profession can be described by Aristotle as follows:

"Those who educate children well are to be honored more than those who produce them, for those who produce children give them only life, but those who educate them give them the art of living well"

It is also interesting to note the following parable:

"A good teacher makes you learn, a bad teacher makes you unlearn"

Teaching means bringing learning in a student even though sometimes learning does not happen. Teaching aims to change behavior, behavior to gain new knowledge, and beliefs [Sharifah Alwiyah Alsagof 1981]. Giving instructions aims to acquire knowledge and trust, while training is an effort to change behavior and conduct. Training and instruction represent teaching because both are included in 3 areas, namely behavioral and behavioral areas; knowledge and beliefs and areas of intellectual intelligence.

Effective teaching methods enable a better transfer of knowledge between teachers and students. Undoubtedly, various methods of teaching taekwondo skills are used by instructors and coaches either for the purpose of competition or grading a test. However, for young Taekwondo instructors, their lack of exposure to the variety of methods of teaching Taekwondo to children makes them not interested in participating in Taekwondo. This requires educators to learn various alternative methods to overcome the problem. This study aimed to examine the effectiveness of two (2) teaching methods; observation techniques and hand-body manipulation techniques on the learning of Taekwondo Taegeuk 3 (TT3) among primary school children.

Taekwondo is divided into two events, namely Kiu-rogi (sparring) and Poomsae (taegeuk) which have different task involvement. Poomsae involves a number of movements consisting of punches, blocks, kicks, and stands. Kiu-rogi and Poomsae have the same type of skills; yet the environment for performing skills is different. Kiu-rogi events, are conducted in an unpredictable environment, and athletes must consider environmental conditions (open skills) when acting. Whereas the Poomsae environment is more consistent, predictable, there are no external factors influencing the performer, and the athlete should perform a particular form of movement known as a closed skill [Sotoodeh *et al.* 2015].

The Poomsae event consists of several categories and each category is determined based on movement skills and tasks. While some simple forms are categorized based on the need for task movement (discrete, continuous, serial) as well as task perception characteristics either open or closed [Schmidt, Lee, 2011]. The focus of this study is Taekwondo Poomsae, especially Tae-

geuk. Taegeuk involves a series of movements, namely punches, blocks, kicks and stances found in the syllabus of each grade or Taekwondo belt. Each Taekwondo class hierarchy has its own Taegeuk. For example, yellow belt 8th grade students studied Taegeuk 1 in their syllabus. In the context of this research, Taekwondo Taegeuk 3 (TT3) which is a green belt holder for 6th grade Taekwondo students were selected because they have not learned TT3 skills.

Observational Learning Methods

The main purpose of teaching is learning. Although not all students learn in the same way, 3 learning processes occur in each physical skill, namely understanding, acquiring and mastering motor skills [Schempp, P.G., 2003: 39]. A good teacher not only knows the phase but also uses it to accelerate students' learning. Since skills can be learned then, they can also be taught.

Learning means any permanent change in behavior as a result of experience or training [Ciccarelli *et al.* 2012] and it differs from genetically controlled maturation. Observational learning is the learning of new behaviors as a result of observation of the actions of models that do so [McCullagh *et al.* 2001; Ciccarelli *et al.* 2012:201]. Sometimes such a behavior is necessary and other times unnecessary. The result of the observation of the movements learned causes the students to try to imitate the same movements to succeed. To perform imitation in any one process, Albert Bandura emphasizes that there are four (4) main elements of observational learning:

- i. Attention - to enable learning through observation, students must pay attention to the model
- ii. Memory- students must be able to retain a memory of what was done such as remembering the steps of preparing a dish that was first seen in a cooking program
- iii. Imitation - can produce or mimic the actions of a model
- iv. Motivation - having the desire or motivation to perform the action

What happens during the learning process depends a lot on the task [Zipp, Gentile 2000]. To help students learn and improve skills, teachers and coaches need to explain and demonstrate those skills so that students understand how the skills need to be performed. In a learning environment, teachers and trainees typically use verbal instructions with signal words / phrases to direct students' attention to specific components such as limb position to movement, movement analogy or any external object in the environment during training [Ehrlenspiel *et al.* 2013].

When a student can do a skill that was previously difficult or perform a skill better than before, then learn-

ing has taken place. Skill learning is a continuous, cyclical process. Very rarely can a novice student learn a new skill at a fast pace and perform it efficiently. Most students need continuous process and information as well as repeated practice to fully master the skills. Once the basic skills have been mastered, then the next skills are easier to learn and refine until they become proficient. This requires students to go through each phase of understanding, training, and performance over and over again.

Learning movement skills involves the transfer of information from teachers to students through observation is the most frequently used method and has many advantages [McCullagh *et al.* 1997; Ashford *et al.* 2006]. Observational learning involves two-way interaction and engaging students because martial arts activities are activities that involve contact between the two parties [Shapie *et al.* 2019] This method is also recommended to be used to motivate athletes to participate in exercise and maintain motivation while competing [Sotoodeh *et al.* 2012]. Effective learning with appropriate instruction delivery can result in good performance change and is appropriate for varying performance contexts [Davids *et al.* 2008].

Hand-Body Manipulation Methods

Initially, the use of the hand-body manipulation method to teach physical skills was applied to the visually impaired population as well as assisting with upper limb brain injury recovery techniques/hemiplegic motor function. A study by Abdullah *et al.* [2008] found that physical skills are more difficult to learn by verbal instruction than demonstration, especially when learning new skills, in fact, requires a different teaching approach Sotoodeh *et al.* [2012], therefore, researchers chose this method as an alternative method to teach Taekwondo taegeuk as it has the potential to achieve better results although there are no studies to prove the effectiveness of this teaching method. Hand-body manipulation methods are likely to show higher skill performance because the sample receives passive facilitation on certain movements by the coach or instructor. This alternative method will also increase awareness among children about discrete movement phases in a series of skill sets. Megumi *et al.* [2009] agreed that the facilitation method allows an individual to initiate a movement in response to the facilitator's intentions. The use of the hand-body method among the normal vision population takes longer because of the need to facilitate every individual who needs it.

Method

Pre- and post-test experimental designs were used in this study. The purpose of the study was to examine the effectiveness of observation and hand-body manipula-

tion methods for learning Taekwondo Taegeuk among primary school students.

Participants

The study population involved children aged between 7 and 12 years as most of the 8th grade students were comprised of children in a certain age range. Study participants were recruited using sampling techniques aimed at involving children who were members of a Taekwondo club in Malaysia. A total of 40 primary school children were involved in this study. The subjects consisted of 18 boys and 22 girls.

Measures

A total of 21 sets of defensive and offensive movements were tested before and after treatment. Participants assessed their taegeuk performance based on the memorization of the TT3 steps. Taegeuk 3 is a syllabus that should be studied by the students of class 6 green belt holders. For each correct TT3 movement = 1 mark, if incorrect movement = 0 marks.

Procedures

This research has received research ethics approval from one of the public universities in Malaysia. A briefing on the study was held involving the study subjects, parents and guardians of the children. The PAR-Q form and the injury history questionnaire were also submitted to parents and guardians for completion and submitted back to the researcher.

Experimental Groups

The subjects had followed the same pre-test session before the intervention session began. During the pre-test session, all subjects watched a video of the TT3 presentation before performing the first attempt. The subjects were then divided into 2 experimental groups namely $N_1 = 20$ (observation), $N_2 = 20$ (hand-body manipulation) and attended 2 intervention sessions for 1 ½ hours each to learn and practice TT3. A 3-hour training session was chosen because proficiency in various martial arts techniques takes between 2 weeks to several years depending on the course and the desired skill level [Burke *et al.* 2011]. The training period of 3 hours is also relevant as it involves a set of 21 discrete defensive and offensive movements and the selected subjects have no previous experience in learning Taekwondo. Both groups were not informed about the use and effectiveness of different teaching methods. The time and place of each group also differed to avoid any side effects of learning that could affect group performance and study outcomes [Beedie, Coleman, Foad 2007].

Data Analyses

The selected study instrument was a TT3 score sheet. Both groups were assessed based on memorization of step TT3. Scores before and after the test were recorded

and analyzed using IBM SPSS Statistics. Descriptive data were analyzed using descriptive statistics such as mean (μ) and standard deviation (SD). The significance level set was at $p < 0.05$. Inferential statistics, such as the Paired T Test were used to identify whether there were significant differences between the variables studied.

Results

Table 1 shows pre-test scores obtained by the two groups were quite similar because the activity saw the movement of taegeuk 3 and the same amount of pre-test time was given. Learning groups through observation (N_1) and learning groups through hand-body movement manipulation (N_2) recorded data ($\mu = 11.50$, $SD = 6.428$) and ($\mu = 11.90$, $SD = 4.388$) respectively.

Meanwhile, the post-test scores showed significant differences between the two groups after the learning group through observation (N_1) managed to record better data ($\mu = 28.85$, $SD = 8.093$) than the learning group through hand-body manipulation (N_2) ($\mu = 21.15$, $SD = 8.845$). As a result, learning methods using observation technique yields an effective learning transfer because it saves time, allows subjects to watch demonstrations of taegeuk 3 more often and is suitable for teaching numerous students.

Table 1. Descriptive Statistics (Pre-Post Test score of both treatment groups)

	Group	N	Mean	Std. Deviation	Std. Error Mean
PRE	OBSERVATION	20	11.50	6.428	1.437
	HANDBODY MANIPULATION	20	11.90	4.388	.981
POST	OBSERVATION	20	28.85	8.093	1.810
	HANDBODY MANIPULATION	20	21.15	8.845	1.978

The effect of observational learning on Taegeuk Taekwondo learning among primary school students

Table 2 shows the Paired Samples Test to see the significant differences between pre-test and post-test the effect of observational learning on Taekwondo Taegeuk 3 learning among primary school students. The results showed that the value of $t = -10.639$, $p < .000$ ($p < 0.05$) showed that there was a significant difference between the pre-test and post -test mean. Post -test results recorded a better mean score ($\mu = 28.85$, $SD = 8.093$) than pre -test ($\mu = 11.50$, $SD = 6.428$)

Table 2. Paired Samples Test (Observational Learning)

Pair 1 PRETEST - POSTTEST	N	t	df	Sig. (2-tailed)	Paired Differences				
					Mean	Std. Deviation	Std. Error Mean	95% Confidence interval of the difference	
								Lower	Upper
	20	-10.639	19	.000	-17.350	7.293	1.631	-20.763	-13.937

The effect of observational learning on Taegeuk Taekwondo learning among primary school students

Table 3 shows the Paired Samples Test to see the significant differences between pre-test and post-test the effect

of hand-body manipulation learning on Taekwondo Taegeuk 3 learning among primary school students. The results showed that the value of $t = -5.815$, $p < .000$ ($p < 0.05$) showed that there was a significant difference between the mean of pre -test and post -test. The post -test results recorded a better mean score ($\mu = 20.65$, $SD = 9.016$) than the pre -test ($\mu = 11.80$, $SD = 4.287$)

Table 3. Paired Sample Test (Hand-body Manipulation Technique)

Pair 1 PRETEST - POSTTEST	N	t	df	Sig. (2-tailed)	Paired Differences				
					Mean	Std. Deviation	Std. Error Mean	95% Confidence interval of the difference	
								Lower	Upper
	20	-5.815	19	.000	-9.350	7.191	1.608	-12.716	-5.984

Discussion

Post-test results showed that the mean score obtained by the observational learning group ($\mu = 28.85$, $SD = 8.093$) was higher than that of the hand-body manipulation group ($\mu = 21.15$, $SD = 8.845$). This indicates that observational learning had shown better effectiveness throughout the treatment period. This is because the subjects in the treatment group are taught simultaneously over time and could perform more frequent repetitions of Taegeuk step 3. In contrast to treatment group 2 (hand-body manipulation method) because more time was used to facilitate each subject individually. Statistically, both treatment methods showed significant results and there was an increase in scores. The greater improvement of the observational learning treatment group also led to a greater frequency of taegeuk performance by instructor which allows subjects to observe the taegeuk more than the opposing group.

The observational learning method had caused a better improvement margin rather than hand-body manipulation method. This is a result of the suitability of the teaching method on teaching a large group of primary school-aged children. Applying this specific treatment allow the subjects to observe the correct execution of Taegeuk in greater frequency as the instructor teaches the Taegeuk pattern while demonstrating the Taegeuk movement. This method also favours the aspect of crowd control as it enables the instructor to teach all of the subject simultaneously. As a lump sum effect, this method saves the instructor more time. The greater improvement of the observational learning treatment group also led by a greater frequency of Taegeuk performance by instructor which allows subjects to observe the Taegeuk more than the opposing group.

The hand body manipulation method indicates that the method is not suitable for teaching a large group of primary school students. This method takes a long time because instructors are required to facilitate students individually or even one-on-one tutorials. Therefore, there are several students who are assisted in a greater

and even lower frequency. This results in a variety of scoring patterns within the group. In fact, the post-test scores obtained were inconsistent because there were subjects that obtained full post-test scores, high improvement points, low improvement points and no improvement at all.

Conclusions

Based on the result, the observational learning manifests better results in Taegeuk 3 memorization among primary school children than hand-body manipulation method. This is because the teaching method fulfil the wise of time sparing, crowd control, and sanction to perform the Taegeuk in higher frequency. Findings of the study showed that the teaching method using treatment 1 (observation technique) displays effective learning transfer results among primary school students because it saves time, allows subjects to witness the demonstration of Taegeuk 3 more often and is suitable for teaching many students.

Treatment 2 (hand-body manipulation method) may produce better results if the number of samples taught per session is reduced. This allows the instructor to allocate more time to facilitate each individual in need more frequently on a one-on-one basis. This effect was shown by an N₂ subject who did not show any improvement due to lack of facilitation by the instructor and the number of subjects who got full post-test scores decreased in treatment group 2 (hand-body manipulation technique).

There is a need for researchers to identify more alternatives for teaching sports-specific serial movement skills because there are no accurate studies on the effectiveness of each teaching method. This study only examines the effectiveness of two teaching methods namely observation and body manipulation. Obtaining a variety of teaching methods provides trainees with a variety of teaching alternatives to use when teaching or coaching in diverse situations.

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Efektywność metod obserwacji i manipulacji ręką-ciałem w nauce Taekwondo Taegeuk wśród dzieci szkół podstawowych

Słowa kluczowe: metoda nauczania, obserwacja, manipulacja ciałem i ręką, zapamiętywanie, sztuka walki

Streszczenie

Tło. Dobra metoda nauczania pozwala na lepsze przekazywanie wiedzy między nauczycielem a uczniem.

Problemy i cel. Instruktorzy Taekwondo nie mają możliwości zapoznania się z różnorodnymi metodami nauczania dzieci Taekwondo, co powoduje, że dzieci nie są zainteresowane uczestnictwem w zajęciach. Celem niniejszej pracy było zbadanie

skuteczności dwóch metod nauczania: technik obserwacji i manipulacji ręką-ciałem na naukę Taekwondo Taegeuk 3 (TT3) wśród dzieci ze szkoły podstawowej.

Metody. W badaniu zastosowano eksperymentalne metody badawcze pre- i post-test. Badana grupa składała się z dzieci ze szkół podstawowych. W badaniu wzięło udział 40 dzieci należących do klubu Taekwondo w Malezji. Wszyscy uczestnicy przeszli tę samą sesję przedtestową przed rozpoczęciem sesji interwencyjnej. Uczestnicy zostali podzieleni na 2 grupy eksperymentalne: N1 = 20 (obserwacja), N2 = 20 (manipulacja ręką-ciałem) i wzięli udział w 2 sesjach interwencyjnych trwających 3 godziny, aby nauczyć się i przećwiczyć TT3 różnymi metodami. Wybrany narzędziem badawczym był arkusz wyników TT3. Wyniki przed i po teście były rejestrowane i analizowane przy użyciu IBM SPSS Statistics. Wynik. Wyniki analizy danych pokazały, że wyniki przedtestowe uzyskane przez obie grupy były dość podobne, ponieważ wykonano te same ćwiczenia i przeznaczono na nie tyle samo czasu. Wyniki uzyskane po teście wykazały znaczące różnice między obiema grupami.

Wnioski. Metody nauczania wykorzystujące techniki obserwacyjne pozwalają na efektywne przekazywanie wiedzy, ponieważ oszczędzają czas, uczestnicy mogą częściej oglądać demonstracje TT3, a także uczyć wielu uczniów.