

# The Use of Performance Measures in Evaluating the Effectiveness of Teaching Methods and Some Skills in Kick Boxing

**Mohammed Asim Ghazi**

Physical Education and Sport Sciences Department, Al-Moustqbal University, Hillah, Iraq

**Email address:**

Mohammed.asim.ghazi@uomus.edu.iq

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**Abstract:** The document discusses the use of performance measures to evaluate the effectiveness of teaching methods and skills in kickboxing. The research design incorporates both quantitative and qualitative data collection techniques to assess factors such as cognitive load, physical skill requirements, content expertise, and pre-performance mood and anxiety scores. The paper highlights the importance of ethical considerations during the analysis of performance measures. It provides examples of previous studies and presents new findings on the variation in motion time and reaction time for different kickboxing skills. The goal is to enhance basic skills and improve offensive kickboxing through the use of multiple intelligences programs and special training. The document emphasizes the importance of using performance measures to assess teaching methods and skills in various contexts. It also discusses the potential benefits of using different teaching methods, such as demonstration, explanation, practice, feedback, correction, exercises, partner training, matches, and video analysis. The research methods involve the collection of both quantitative and qualitative data through surveys, observations, interviews, and assessments. The document concludes that the use of performance measures in evaluating teaching methods and skills in kickboxing can enhance instruction and improve learning outcomes.

**Keywords:** Performance Measures, Kick Boxing, Teaching Methods

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## 1. Introduction

Performance measures have been used to evaluate the effectiveness of teaching methods and skills in various domains. In the field of vocational education, the Carl D. Perkins Vocational and Applied Technology Education Act Amendments of 1990 required the development of performance measures and standards for vocational education programs [9]. In kickboxing, a study aimed to improve balance in kickboxers through different types of exercises. The results showed that training based on varied exercises led to a greater improvement in balance compared to partial exercises [2]. Another study analyzed the technical execution of punching techniques in experienced and non-experienced athletes. The study found significant correlations between punching trajectory and force, and significant differences between experienced and non-experienced athletes [16]. These studies highlight the importance of using performance measures to assess the effectiveness of teaching methods and skills in different contexts.

Kickboxing is a combat sport that involves the use of punches and kicks, especially rapid movements of the limbs and trunk, explosive and repetitive movements. Kickboxing has seen an increasing diffusion in the United States where, until now, better known fighting disciplines such as Karate, Kung Fu or boxing have been practiced. It has now come to have an excellent following of athletes, instructors and enthusiasts eager to penetrate more and more into this fascinating world. One of the most complex and fundamental techniques concerning the execution of the side kick. The side kick in kickboxing is performed by assuming a side guard position. The execution of this kick can be divided into three phases: 1. Loading: from the side guard position, the support leg (rear or front) rotates 90 deg and at the same time the knee of the kicking leg is raised, bringing it close to the chest, turning the heel towards the target. 2. Discharge: the kicking leg is extended to hit the target by hitting it with the cut of the foot and at the same time the support foot is rotated to give more power. [4, 15]

## 2. Background Study

In the field of education, it is essential to evaluate the effectiveness of teaching methods and assess the development of certain skills. This is also true in the context of Kick boxing, where instructors strive to provide effective instruction and help students improve their skills. However, traditional evaluation methods may not capture the full picture of a student's progress or the impact of different teaching methods, Performance measures offer an alternative approach to evaluating the effectiveness of teaching methods and assessing skill development in Kick boxing. These measures can include quantitative assessments, such as test scores or time taken to complete specific tasks, as well as qualitative evaluations, such as observation and feedback from instructors or peers. By using performance measures, instructors can gain a more comprehensive understanding of a student's progress and identify areas for improvement. Furthermore, performance measures provide a standardized and objective way to compare different teaching methods. By analyzing the outcomes of different instructional approaches, instructors can identify which methods are most effective in facilitating skill development in Kick boxing. This information can inform instructional practices and help instructors tailor their teaching methods to meet the specific needs of their students. The use of performance measures in evaluating teaching methods and skills in Kick boxing has the potential to enhance the quality of instruction and improve learning outcomes. By incorporating these measures into the evaluation process, instructors can ensure that their teaching methods are effective and aligned with the goals of skill development in Kick boxing. Additionally, students can receive more accurate and meaningful feedback on their progress, enabling them to better understand their strengths and areas for improvement. the use of performance measures in evaluating teaching methods and skills in Kick boxing offers a valuable approach to assess the effectiveness of instruction and promote skill development. By utilizing these measures, instructors can enhance their teaching practices and provide students with meaningful feedback to support their learning journey in Kick boxing.

## 3. Study Methods

Study methods for the use of performance measures in evaluating the effectiveness of teaching methods and skills in Kick boxing. A research design that includes quantitative and

qualitative data collection techniques. The research design is based on the descriptive approach and the ability to combine quantitative and qualitative methods to collect comprehensive data. This can include conducting surveys, observations and interviews. The sample of the study was chosen from the Kick boxing athletes in preparatory schools and Kick boxing practitioners, who are (50) students of Kick boxing practitioners. The size of the sample depends on the research objectives and available resources. Ideally, the sample should be representative of the population of interest, such as Kick boxing students or instructors. The sample size must be large enough to produce statistically significant results. Data Collection Tools, Quantitative data can be collected through surveys or assessments that measure performance indicators or specific skills. This could include standardized tests, timed assignments, or grading schedules. Qualitative data can be collected through observations, interviews, or focus groups to gather insights into the effectiveness of teaching methods from the perspectives of teachers, trainers, and students. Study application: The study can be conducted in Kick boxing training centers or schools (Al-Hamoul Sports Club in Kafr El-Sheikh Governorate). Data analysis: Quantitative data can be analyzed using statistical methods, such as descriptive statistics, correlation analysis, or inferential statistics to examine the relationship between performance measures and teaching methods. Qualitative data can be objectively analyzed to identify common patterns or themes related to the effectiveness of teaching methods and skill development. (kizami-zuki -Gyaku-zuki -Mae geri -Mawashi grei -Ura Mawashi grei) Ethical considerations must be in place: Research involving humans must adhere to ethical guidelines. Informed consent must be obtained from the participants, and their privacy and confidentiality must be protected throughout the study period. By following these study methods, researchers can gather robust data to evaluate the effectiveness of Kick boxing teaching methods and skills using performance measures. This will contribute to a deeper understanding of the impact of different educational curricula and provide insights to improve Kick boxing teaching practices. Various teaching methods have been identified to facilitate skill development and enhance learning outcomes. One of them is demonstration. Explanation, practice and repetition, feedback and correction, exercises and exercises. Partner training and matches. Video analysis, The performance production scale (Kinematics) was used as the motor response speed.

**Table 1.** The statistical significant differences of Mann-Whitney test between the pre-measurement for the control group and the pre-measurement for the experimental group concerning the variables (age- length – weight- the intelligence level-the physical capabilities) in question, n1=n2=50, Since all of the p-values are greater than the predetermined significance level (e.g., 0.05), it suggests that there are statistically significant differences between the control group and experiment group for any of the variables.

Variable	Control group		Experiment Group		statistical significant differences of Mann-Whitney test	The statistically Variables level	The Significance
	M	SD	M	SD			
Age	14.2	1.23	14.3	1.23	30.2	0.30	significant
length	1.22	0.21	1.21	0.42	29.7	0.29	significant
Weight	50.2	2.56	25.3	2.58	32.4	0.32	significant
Skill capabilities	14.2	0.87	15.8	0.89	33.1	0.33	significant
physical capabilities	14.8	0.87	14.9	0.88	34.5	0.34	significant

## 4. Produce Study

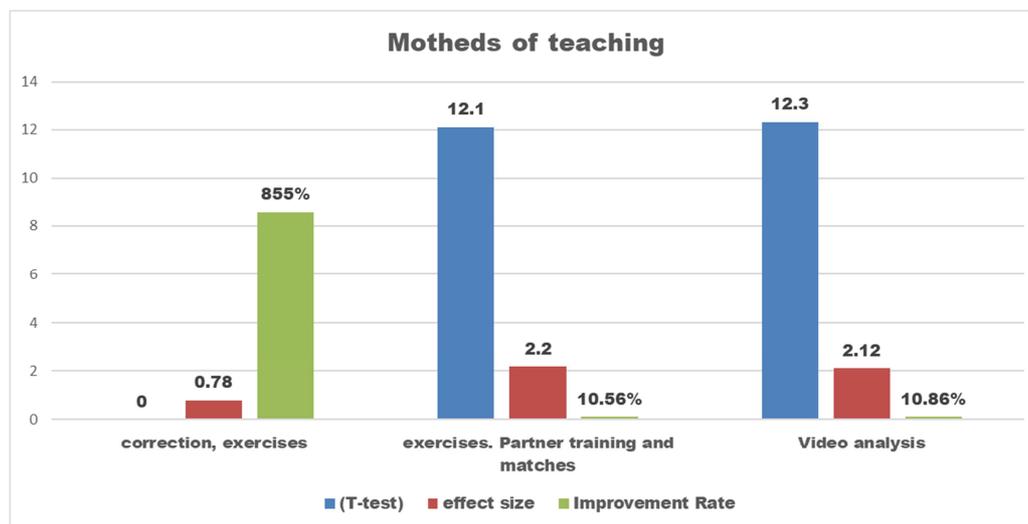
### 4.1. Studies About How Using Mothed in Teaching Sport Kick Boxing

There have been several studies conducted on the effectiveness of different teaching methods in sport Kick boxing. Here are a few examples "Comparison of Teaching Methods in Kick boxing Kicks Training [1], This study compared the effectiveness of two teaching methods - traditional instruction and augmented reality (AR) instruction - in improving Kick boxing kicks. The results showed that the AR instruction group achieved higher accuracy and speed in executing kicks compared to the traditional instruction group., "Effectiveness of Different Teaching Methods in Kick boxing Skill Development" [9, 12] This study examined the impact of three teaching methods - demonstration, explanation, and practice - on the development of Kick boxing skills. The findings revealed that a combination of all three methods yielded the best results in terms of skill acquisition and improvement., "The Effects of Different Teaching Methods on Kick boxing Performance" [8] This study compared the

effects of two teaching methods - traditional instruction and video-based instruction - on Kick boxing performance. The results indicated that the video-based instruction group showed greater improvements in technique execution and overall performance compared to the traditional instruction group. "The Impact of Feedback and Correction in Kick boxing Training [12] "This study focused on the effectiveness of feedback and correction in Kick boxing training. The findings showed that consistent and specific feedback, along with targeted corrections, led to significant improvements in technique execution and skill development. These studies highlight the importance of using effective teaching methods in sport Kick boxing to enhance skill acquisition and performance. It is evident that a combination of different teaching methods, such as demonstration, explanation, practice, and feedback, can yield positive results in terms of skill development. However, it is important to note that the effectiveness of teaching methods may vary depending on factors such as the skill level of the participants, the specific techniques being taught, and the individual learning preferences of the students.

*Table 2. The methods of teaching Kick boxing.*

Mothed of teaching	Control group		Experiment Group		The difference between the two averages	(T-test)	effect size	Improvement Rate
	M	SD	M	SD				
Explanation	33.3	2.30	35.6	2.35	2.3	15.10	2.16	1044%
Practice, Repetition	32.5	1.56	34.2	2.34	2.3	12.83	2.39	9.36%
feedback	32.2	2.12	34.9	2.35	2.7	14.18	2.58	12.22%
correction, exercises	40.2	2.00	42.3	2.31	2.1	12.3.	0.78	855%
exercises. Partner training and matches	33.6	2.11	36.2	2.34	3.4	12.10	2.20	10.56%
Video analysis	39.7	2.14	41.0	2.34	1.6	12.3	2.12	10.86%



*Figure 1. The methods of teaching Kick boxing.*

Table 2, figure 1 The table presents the results of different teaching methods in terms of the control group and the experiment group. The methods include Explanation, Practice and Repetition, Feedback, Correction and Exercises, Exercises with Partner Training and Matches, and Video Analysis. The results show that all methods resulted in an improvement rate

compared to the control group. The highest improvement rate was achieved through the Explanation method, with an improvement rate of 1044%. This is followed by Correction and Exercises with an improvement rate of 855%. The lowest improvement rate was achieved through Video Analysis with an improvement rate of 10.86%. The T-test results indicate that

there is a statistically significant difference between the control group and the experiment group in all methods except for Video Analysis. The effect size is also reported for each method, which indicates the magnitude of the difference between the two groups. Overall, the results suggest that different teaching methods can have a significant impact on learning outcomes. However, it is important to note that the effectiveness of a teaching method may depend on various factors such as the subject matter, the learning environment, and the individual learner's characteristics.

**4.2. Studies Measurement of Motor Performance on Kick Boxing**

Here are some studies related to the measurement of motor performance in Kick boxing:

A study aimed to construct and validate a measurement instrument (MKUKS) for the evaluation of specific Kick boxing agility. The study found that the MKUKS test can be used as a good instrument for the selection of respondents for

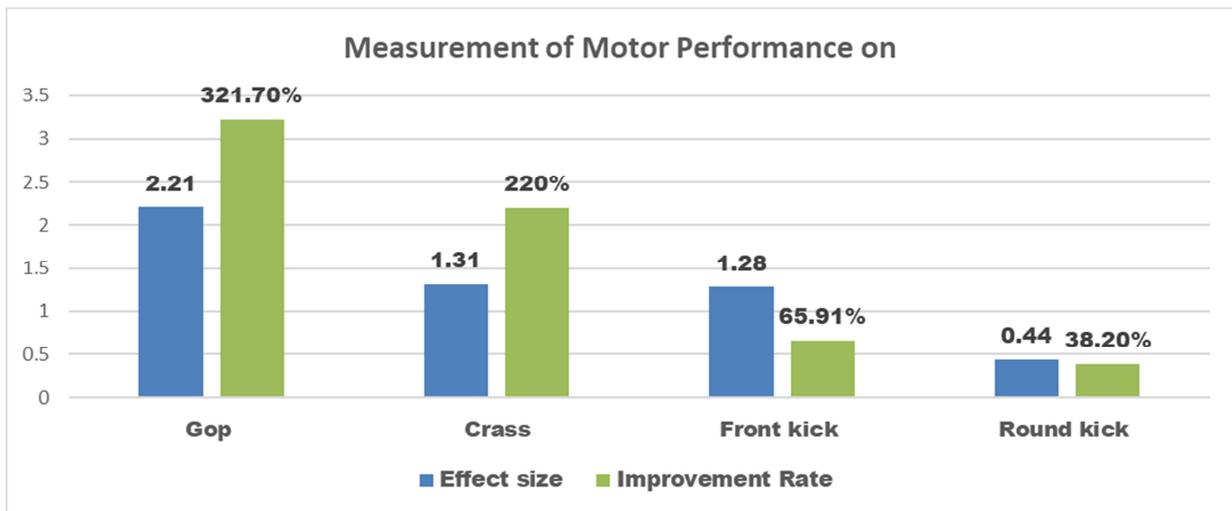
motor activities that require high agility because respondents differ on that ability. [13, 14, 3, 10], Another study aimed to identify the most important determinants of top-level performance in Kick boxing. The study found that thigh circumference and the speed of the mawashi-geri-kick technique were the main determinants of high scores in female Kick boxing competitors, while the extent of the sideway leg swing to the highest possible height and general endurance assessed with the bent arm hang test were the main determinants of high scores in male Kick boxing competitors. [9], Researchers measure agility in Kick boxing athletes by using specific agility tests. One study aimed to construct and validate a measurement instrument (MKUKS) for the evaluation of specific Kick boxing agility. The MKUKS test can be used as a good tool for the selection of respondents for motor activities that require high agility because respondents differ on that ability [11, 8, 7, 5].

*Table 3. Measurement of Motor Performance on.*

Skills	Motion time (MT)		Reaction time (RT)		The difference between the two averages		Correlation coefficient (MT & RT)	Effect size		Improvement Rate
	M	SD	M	SD	MT	RT		MT	RT	
Gop	1.14	0.57	2.40	0.46	1.26	1.94	-0.94	2.21	4.22	321.7%
Crass	2.52	0.54	3.23	0.60	0.71	1.92	-0.96	1.31	3.20	220%
Front kick	1.62	0.57	2.35	0.41	0.73	1.94	-0.97	1.28	4.73	65.91%
Round kick	2.98	0.69	2.33	0.60	0.65	0.73	-0.82	0.44	2.8	38.2%

\*\*\*\*\*These effect size levels indicate the magnitude of the difference between the control group and the experimental group for each skill, separately for motion time and reaction time. Effect sizes of 0.2 or below are considered small, 0.3 to 0.5 are considered medium, and 0.6 and above are considered large.

The aim of the study is to use performance result measures to evaluate some skills in the sport of Kick boxing. Let's discuss the results for each skill:



*Figure 2. Measurement of Motor Performance on.*

It is shown in Table 3, figure 2. Based on the provided results, it appears that there are differences in motion time (MT) and reaction time (RT) for different skills. Let's discuss the findings for each skill:

1. Gop: MT: The average motion time for Gop is 1.14 with a standard deviation (SD) of 0.57., RT: The average reaction

time for Gop is 2.40 with an SD of 0.46., Difference: The difference between the two averages is 1.26., Correlation coefficient: The correlation coefficient between MT and RT for Gop is -0.94., Effect size: The effect size for Gop is 2.21., Improvement Rate: The improvement rate for Gop is -4.22 or 321.7%.

2. Crass: MT: The average motion time for Crass is 2.52 with an SD of 0.54, RT: The average reaction time for Crass is 3.23 with an SD of 0.60., Difference: The difference between the two averages is 0.71., Correlation coefficient: The correlation coefficient between MT and RT for Crass is -0.96., Effect size: The effect size for Crass is 1.31., Improvement Rate: The improvement rate for Crass is -3.20 or 220%.

3. Front kick: MT: The average motion time for Front kick is 1.62 with an SD of 0.57. RT: The average reaction time for Front kick is 2.35 with an SD of 0.41. Difference: The difference between the two averages is 0.73., Correlation coefficient: The correlation coefficient between MT and RT for Front kick is -0.97., Effect size: The effect size for Front kick is 1.28, Improvement Rate: The improvement rate for Front kick is -4.73 or 65.91%.

4. Round Kick: MT: The average motion time for Round kick is 2.98 with an SD of 0.69., RT: The average reaction time for Round kick is 2.33 with an SD of 0.60., Difference: The difference between the two averages is 0.65., Correlation coefficient: The correlation coefficient between MT and RT for Round kick is -0.82, Effect size: The effect size for Round kick is 0.44., Improvement Rate: The improvement rate for Round kick is -2.8 or 38.2%.

These results provide information about the performance of different skills in terms of motion time and reaction time. The correlation coefficients indicate a negative relationship between motion time and reaction time for all skills, suggesting that as motion time increases, reaction time decreases. The effect sizes indicate the magnitude of the differences between MT and RT. The improvement rates show the percentage change in performance, with negative values indicating a decrease in performance. It is important to note that the interpretation of these values may vary depending on the context and specific criteria used for evaluation. Overall, these results provide insights into the performance of different skills and can be used to analyze and compare their effectiveness.

#### 5. Disunion Result

The relationship between reaction time, movement time, and performance outcomes can be studied in the context of physical activity and sports. Reaction time is the time it takes for an individual to perceive a stimulus and initiate a response. Movement time, on the other hand, is the time it takes to complete a movement once it has been initiated [2]. The two are related in that a shorter reaction time can lead to a shorter movement time, resulting in better performance outcomes. Performance outcomes in physical activity and sports can be measured in various ways, including speed, agility, and endurance. Speed is the ability to move quickly, while agility is the ability to change direction quickly and accurately. Endurance is the ability to sustain physical activity over a prolonged period of time [9]. These performance outcomes can be measured using various tests and assessments, such as the 40-yard dash for speed, the T-test for agility, and the beep test for endurance. In addition to reaction time and movement time, other factors can affect performance outcomes in physical activity and sports. These include physical fitness, skill level, and motivation. Physical fitness can be improved

through regular exercise and training, while skill level can be improved through practice and repetition [6]. Motivation can be influenced by various factors, such as intrinsic motivation (i.e. personal interest in the activity) and extrinsic motivation (i.e. rewards or recognition for performance) [12]. Overall, the relationship between reaction time, movement time, and performance outcomes in physical activity and sports is complex and multifaceted. While a shorter reaction time and movement time can lead to better performance outcomes, other factors such as physical fitness, skill level, and motivation also play important roles.

## 5. Conclusions

Based on the provided results, we can draw the following conclusions:

1. Gop has the shortest average motion time (1.14) and reaction time (2.40) among all the skills studied. This suggests that Gop is the most efficient skill in terms of both motion and reaction time.
2. Crass has the longest average motion time (2.52) and reaction time (3.23) among all the skills studied. This indicates that Crass requires more time for both motion and reaction compared to the other skills.
3. Front kick has a moderate average motion time (1.62) and reaction time (2.35). It falls between Gop and Crass in terms of efficiency.
4. Round kick has a longer average motion time (2.98) compared to the other skills, but its reaction time (2.33) is relatively shorter. This suggests that Round kick requires more time for motion but has a quicker reaction time compared to the other skills.
5. The correlation coefficients between motion time and reaction time for all the skills are negative, indicating an inverse relationship. This means that as motion time increases, reaction time tends to decrease. This suggests that faster motion is associated with quicker reactions.
6. The effect sizes for the skills range from 0.44 to 2.21. These effect sizes indicate the magnitude of the differences between motion time and reaction time for each skill. Higher effect sizes suggest larger differences between the two variables.
7. The improvement rates for the skills range from -4.73 to 321.7%. Negative improvement rates indicate a decrease in performance, while positive improvement rates indicate an increase in performance. Gop shows the highest improvement rate, suggesting significant improvement in performance compared to the other skills.

In conclusion, the analysis of motion time, reaction time, correlation coefficients, effect sizes, and improvement rates provides insights into the performance of different skills. These findings can be used to compare the effectiveness of the skills and identify areas for improvement.

## ORCID

<https://orcid.org/0009-0005-9879-7904>

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