

The Sport Value Education Model: Can it Improve Physical Ability, Technique, and Life Skills in Young Karate Practitioners?

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ABSTRACT:

Background: Karate training practices tend to focus more on physical and technical aspects, so the development of life skills is often neglected.

Objective: This study aims to examine the effect of the sport value education model on improving the physical abilities, basic techniques, and life skills of young karate practitioners.

Materials and Methods: The research method was an experiment using a randomized controlled trial design based on a pretest-posttest control group design. The population consisted of 60 male karate practitioners (ages 13–14 years), all of whom were selected as the sample through simple random sampling and divided into an experimental group (n = 30) and a control group (n = 30). The instruments included the Life Skills Scale for Sport questionnaire, a standardized basic technique assessment rubric, and physical tests (push-ups, sit-ups, back-ups, squats, and the multistage fitness test). Data were analyzed using descriptive statistics, normality and homogeneity tests, an independent samples t-test, and Cohen's d, with the assistance of SPSS version 23. The results showed that the experimental group experienced a significant improvement compared to the control group across all variables ($p < 0.05$). The most dominant effects of the intervention were observed in lower-body muscular endurance (squat, $d = 0.984$), striking technique (gyakuzuki, $d = 0.846$), as well as life skills (social skills, $d = 0.886$) and time management ($d = 0.837$). In conclusion, it was found that integrating sports values into physical and technical training sessions proved to holistically improve karateka performance. This study serves as a practical guide for coaches in the long-term development of karateka; however, due to study limitations—such as a sample consisting solely of males and a 6-week duration—follow-up studies requiring a longer duration and the inclusion of female participants are needed.

Keywords: sport value education model, youth karate, life skills, physical abilities, basic techniques.

1. Introduction

Karate is a martial art that has now evolved into a recreational and competitive sport (Yudhistira & Tomoliyus, 2020). In holistic training, ethical values and discipline are deeply ingrained in the sport of karate (Tijo & Marheni, 2018). This is already enshrined in the karate oath, namely: the ability to cultivate one's character, the ability to uphold honesty, the ability to improve performance, the ability to maintain good manners, and the ability to exercise self-control (Susila et al., 2022). In the modern era, these principles align with the concept of life skills, namely: the ability to collaborate, set goals, manage time, demonstrate emotional intelligence, communicate effectively, interact socially, lead, solve problems, and make decisions (Allen, 2018).

Life skills training is designed to enable karateka to develop a sense of self-reliance and understand the traditional values of karate. Previous studies have shown that life skills form the foundation for independent living and survival in one's environment, which is essential for positive youth development (Chinkov & Holt, 2016). Life skills can be applied across all aspects of life, such as school and social relationships (Pierce et al., 2020). There are several reasons why karate has the potential to enhance life skills. A study by Bailey states that physical activities are highly popular and serve as a draw for promoting youth development (Bailey, 2018). In an educational context, it is also noted that sports activities involve collaborative and interactive elements, thereby promoting moral and social development (Jacobs et al., 2018).

However, the reality on the ground reveals a significant gap between the ideal conditions and the actual situation. The development of life skills among some young karateka has not yet yielded optimal results. During training and competitions, respect for peers and seniors is often still lacking. Additionally, karateka's discipline and honesty remain relatively low, as evidenced by behaviors such as reducing the number of movement repetitions when the

coach is not paying close attention. Emotional control and the awareness needed to maintain personal integrity have not yet been firmly established. Based on observations at the training site, this problem arises because training remains predominantly focused on technical and physical aspects. Training models and programs generally aim solely to improve physical fitness and technical proficiency, while the instillation of sports values is still neglected or considered a side effect expected to emerge spontaneously. Meanwhile, physical and technical aspects can be explored and integrated with training strategies to instill sports values without compromising the quality of the techniques themselves. Supported by previous studies indicating that life skills among high-performing athletes are moderate or not yet among the best (Ronkainen et al., 2023), the development of athletic performance is not solely about the pragmatic pursuit of medals but involves holistic development encompassing physical, technical, and psychosocial aspects.

Theoretically, physical exercise is viewed as a means of improving physical fitness (Diel-Conwright et al., 2018). Other studies indicate that exercise not only benefits physical fitness but also reduces gender stereotypes, alleviates anxiety, and enhances social skills (Harmsel-Nieuwenhuis et al., 2025; Review, 2024; Wicker et al., 2023). Therefore, karate has broad potential to enhance a karateka's life skills. Another study states that karate training can develop adolescents' life skills (Sartono, 2025); a study by Tahir indicates that sports have a positive influence on students' life skills (Tahir, 2020); and in line with other studies, the training environment is correlated with the development of athletes' life skills (Allen, 2018). Nevertheless, some existing studies still examine life skills and sports values separately from training structures and assume that their development occurs automatically. In this context, studies related to the development of life skills specific to karate have not received adequate attention and remain limited.

In an effort to bridge theoretical and practical gaps, coaches require concrete interventions. This study aims to examine the effect of sport-

value-based training on improving (1) physical abilities (aerobic endurance, upper-body, back, and lower-body muscular endurance), (2) basic technical skills (punches and kicks), (3) life skills (teamwork, goal setting, social skills, problem solving, emotional skills, leadership, and interpersonal communication). More specifically, the research questions are outlined as follows:

1. How do the effects of the sport value training model and the conventional model differ in terms of physical aspects?
2. How do the effects of the sport value training model and the conventional model differ on technical aspects?
3. How do the effects of the sport value training model and the conventional model differ on life skills?

2. Methodology

2.1 Research Design and Participants

The research method was a quantitative experimental study using a randomized controlled trial design based on a pretest-posttest control group. The population consisted of 60 male karate practitioners with the following inclusion criteria: (1) karate practitioners aged 13–14 years, (2) actively enrolled as students for at least 1–2 years, (3) willing to participate in the intervention by signing an informed consent form; while the exclusion criteria were (1) currently experiencing an injury or other technical constraints, (2) having an attendance rate of less than 80% during the intervention, (3) currently participating in training outside of the provided intervention. The entire population was then selected as the sample using simple random sampling; the team conducted a random draw, whereby numbers 1 through 30 were automatically assigned to the experimental group, while those not selected were automatically assigned to the control group. Consequently, the sample was divided into 30 experimental groups receiving sport-value-based training and 30 control groups receiving conventional training.

2.2 Instruments

a. Life Skills Scale for Sport-

In the initial phase, all participants were gathered to receive instructions from the team on how to complete the questionnaire. Participants carefully filled out the questionnaire for each aspect under the supervision of the research team. The results of this test served as baseline data. The same test would be administered as post-test data after completing the 6-week training program. The questionnaire items are presented as follows:

- Teamwork: 7 questions
- Goal setting: 7 questions
- Time management: 5 questions
- Emotional skills: 5 questions
- Interpersonal communication: 4 questions
- Social skills: 5 questions
- Leadership: 5 questions
- Problem Solving and Decision Making: 5-item questionnaire

b. assessment rubric (Sihombing, Siregar, Riza, 2020)

All participants were gathered to receive instructions from the research team; participants then performed the technical movements as instructed by the team; finally, an independent team assessed all technical aspects performed by the participants. Testing was conducted by an independent team to minimize data bias. The results of this test served as baseline data. The same test will be administered as follow-up data after completing the 6-week training program.

1) Gyakuzuki Punch Test

- Procedure: A punching pad was provided for striking using the gyakuzuki technique; its height was adjusted so that the punch was directed at the participant's abdomen. When the tester started the stopwatch, the participant immediately began striking for 30 seconds; upon completion, the tester stopped the timer.

- Rules: Evaluation uses a standardized scoring rubric based on a Likert scale: 1 = very poor (technical errors), 2 = poor (many technical errors; technique not as it should be), 3 = fair (some errors), 4 = good (few errors), 5 = very good (no errors)

2) Kizamizuki Punch Test

- Procedure: A punching pad is provided for striking using the kizamizuki technique, adjusted to the participant's height; the focus of the strikes is directed toward the head. When the tester starts the stopwatch, the participant immediately performs strikes for 30 seconds; once finished, the tester stops the timer

- Rules: Evaluation uses a standardized rubric based on a Likert scale: 1 = very poor (commits technical errors), 2 = poor (technique has many errors and does not conform to standards), 3 = fair (some errors), 4 = good (few errors), 5 = very good (no errors)

3) Mae Geri Kick Test

- Procedure: A punching pad is provided for kicking using the mae geri technique, adjusted to the participant's height; the kick is aimed at the punching pad in the direction of the abdomen; when the tester starts the stopwatch, the participant immediately performs kicks for 30 seconds; upon completion, the tester stops the timer.

- Rules: Evaluation uses a standardized rubric based on a Likert scale: 1 = very poor (technical errors), 2 = poor (many technical errors; technique does not conform to standards), 3 = fair (some errors), 4 = good (few errors), 5 = very good (no errors)

c. Physical Ability Test

The sequence of physical tests is push-ups, sit-ups, and finally the multistage fitness test. Testing is conducted by an independent team to minimize data bias. The results of

these tests serve as baseline data. The same tests will be administered as final data after completing a 6-week training program.

1) Arm Muscle Endurance (Push-ups)

- Procedure: Start in a prone position with both palms beside your chest, shoulder-width apart, fingers facing forward. Extend your back leg, balancing on the tips of your toes. Ensure your head, back, and hips are in a straight line. During the lowering phase, bend your elbows to form a 90-degree angle, lowering your chest until it almost touches the floor. Push back up with both arms fully extended.

- Rules: Count valid repetitions during the upward and downward movements; partial movements or incomplete positions do not count. This test is performed for 1 minute.

2) Back Muscle Endurance (Back Up)

- Procedure: Lie face down, legs straight and together, hands clasped behind the head; lift the chest and upper body as high as possible, keeping the hips and abdomen tight

- Rules: Consistent up-and-down movements are counted; incomplete movements are not counted. The test is performed for 1 minute.

3) Abdominal Muscle Endurance (Sit-ups)

- Procedure: The participant lies on their back, knees bent at a 90-degree angle, soles of the feet flat on the mat, hands clasped behind the head; lift the upper body using the abdominal muscles until the elbows touch the knees, lower the body in a controlled manner until the back touches the mat again, and repeat.

- Rules: Each complete up-and-down movement counts as one repetition; the test is performed for 1 minute

- 4) Lower-body muscle endurance (squat)
- Procedure: Stand with feet shoulder-width apart, hands in front of the chest; bend your knees and push your hips back, lowering until your thighs are at a 90-degree angle; push back to the starting position with a straight back
 - Rules: If the movement is not performed perfectly—such as hunching the back or not lowering to a 90-degree angle—it does not count; the test is performed for 1 minute
- 5) Aerobic endurance (multistage fitness test)
- Preparation: A 20-meter track is required; mark the end of the 20-meter line with a cone; prepare a speaker with a clear beep recording; provide a form for recording results.
 - Procedure: Participants stand at the starting line; upon hearing a beep, they immediately run toward the front end of the line and must step on the 20-meter line. If a participant runs too fast, they must wait for the next beep; the pace gradually increases with each beep level
 - Rules: If a participant fails to reach the boundary line twice in a row, it is determined that the participant is unable to keep up with the pace; the official then records the participant's last attempt.

2.3 Intervention Procedures

Athletes are guided through stretching exercises and provided with exercise intervention instructions based on sport values and conventional training. The training program is conducted three times a week with a fixed training dose to authentically assess the program's effectiveness; it is carried out over 6 weeks. The details are presented in the table below as follows:

Table 1. Sport-value-based training program for karate

Week	Session	Program
1–6	1–18	1. Standard Operating Procedures a. Pre-training: The coach explains the training objectives based on sport values and the concept of fatigue management. Perform the karate pledge with full commitment. b. Main training session: Performed by rotating through stations 1 through 3. Work time per station is 60 seconds, with a 20-second rest interval; total training duration is approximately 60 minutes. The coach observes whether athletes continue to perform techniques correctly even when fatigued, without compromising their movements (honesty). c. Evaluation and reflection: Conducted for 20 minutes; the coach asks questions such as “What do you feel when you’re fatigued from training?” and “How do you control your emotions to avoid making technical mistakes?” and so on. 2. Core Training Program a. Station 1: Bear crawl to kizame zuki punch (focus: arm, shoulder, and abdominal muscles, and front punch); procedure as follows: 2. Participants perform a bear crawl forward for 5 meters

		3. Upon reaching the end, the athlete pauses to perform 5 kizame zuki punches, then crawls backward and repeats the same punch sequence upon reaching the end. 20-second interval. 4. Integration of emotional control and time management: Athletes are instructed to control their breathing and emotions to ensure stable punch execution even when their arms and shoulders are fatigued. b. Station 2: Crab to Gyakuzuki (focus: back muscles, triceps, legs, and rear strikes), procedure as follows: c. The athlete performs a sideways crab walk and moves backward 5 meters d. Immediately come to a stop, then perform 5 explosive gyakuzuki punches toward the abdomen using a hip thrust, then move backward and repeat the same movement, with a 20-second interval. e. Integration of problem-solving and teamwork: The partner holding the punching pad provides feedback, such as saying “your hips aren’t positioned optimally” and “the punch isn’t aimed correctly,” or other comments focused on correcting the technique. a. Station 3: Duck walk to mae geri (focus: lower legs, thighs, abs, and front kick), procedure as follows: f. The athlete performs a duck walk, which mimics the deep squat exercise position, for a distance of 5 meters g. Upon reaching the end, immediately perform a front kick aimed at the punching pad at the abdomen. h. Integration of goal setting and leadership: The coach sets a minimum requirement of 15 repetitions for each forward and backward pass. If the athlete falls short of this, the coach imposes a penalty requiring them to start over from the beginning, and training partners must encourage one another when a partner becomes fatigued.
Week	Session	Technical training program (control group)
1–6	1–18	1. Standard operating procedures a. Using synchronized counting commands b. Focus is solely on evaluating punches and kicks c. To control for variables, the coach did not engage in discussions or interactions about life skills and did not provide physical exercises d. Pure technical evaluation by the coach without any discussion or reflection on life skills 2. Technical training program a. 15-minute group dynamic and static stretching warm-up

		b. Group technical training for punches (kizami zuki, gyakuzuki) and maegeri kicks: 3 sets of 20 repetitions each, without a target; estimated training duration: 30 minutes c. Punching technique drills (kizami zuki, gyakuzuki) and maegeri kicks targeting a punching pad: 3 sets of 20 repetitions in a group setting; estimated training duration: 30 minutes
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2.4 Statistical Analysis

Data analysis techniques included several statistical tests, namely the Kolmogorov-Smirnov test for data normality and Levene's test

for homogeneity. Furthermore, an independent t-test was conducted with a significance level of >0.05 , and Cohen's effect size was measured. Data analysis was performed using SPSS version 23 (Sulistiyono, Akhiruyanto, et al., 2021)

3. Results

Table 2. Results of the descriptive analysis of life skills, technical skills, and physical abilities

Group	Variable	Mean $\pm$ SD
Control	Pretest_Cooperation	22.50 $\pm$ 2.030
Control	Posttest_Cooperation	23.23 $\pm$ 1.775
Control	Pretest_Goal Setting	21.70 $\pm$ 1.896
Control	Posttest_Goal Setting	22.43 $\pm$ 2.029
Control	Pretest_Time Management	15.13 $\pm$ 1.592
Control	Posttest_Time Management	15.77 $\pm$ 1.455
Control	Pretest_Emotional Skills	14.43 $\pm$ 1.755
Control	Posttest_Emotional Skill	15.10 $\pm$ 1.647
Control	Pretest_Social Skill	14.97 $\pm$ 1.564
Control	Posttest_Social Skills	15.63 $\pm$ 1.426
Control	Pretest_Interpersonal	12.07 $\pm$ 1.530
Control	Posttest_Interpersonal	12.63 $\pm$ 1.402
Control	Pretest_Leadership Skill	14.43 $\pm$ 1.755
Control	Posttest_Leadership Skill	15.17 $\pm$ 1.704
Control	Pretest_Problem Solving	14.90 $\pm$ 1.494
Control	Posttest_Problem Solving	15.63 $\pm$ 1.402
Experimental	Pretest_Cooperation	22.50 $\pm$ 2.030
Experimental	Posttest_Cooperation	32.00 $\pm$ 1.722
Experimental	Pretest_Goal Setting	21.90 $\pm$ 1.936
Experimental	Posttest_Goal Setting	31.43 $\pm$ 1.924
Experimental	Pretest_Time Management	15.27 $\pm$ 1.701

Experimental	Posttest_Time Management	22.67 $\pm$ 1.398
Experimental	Pretest_Emotional Skills	14.53 $\pm$ 1.676
Experimental	Posttest_Emotional Skill	21.87 $\pm$ 1.479
Experimental	Pretest_Social Skill	15.10 $\pm$ 1.668
Experimental	Posttest_Social Skills	22.43 $\pm$ 1.357
Experimental	Pretest_Interpersonal	12.17 $\pm$ 1.599
Experimental	Posttest_Interpersonal	17.63 $\pm$ 1.273
Experimental	Pretest_Leadership Skill	14.53 $\pm$ 1.676
Experimental	Posttest_Leadership Skill	21.87 $\pm$ 1.479
Experimental	Pretest_Problem Solving	14.90 $\pm$ 1.494
Experimental	Posttest_Problem Solving	22.53 $\pm$ 1.279
Control	Pretest_Gyakuzuki	25.76 $\pm$ 5.214
Control	Posttest_Gyakuzuki	33.31 $\pm$ 2.238
Control	Pretest_Kizamezuki	23.69 $\pm$ 4.789
Control	Posttest_Kizamezuki	33.48 $\pm$ 2.029
Control	Pre-test_Maegeri	25.03 $\pm$ 3.803
Control	Posttest_Maegeri	33.14 $\pm$ 2.031
Experimental	Pretest_Gyakuzuki	24.62 $\pm$ 6.304
Experimental	Posttest_Gyakuzuki	36.21 $\pm$ 1.719
Experimental	Pretest_Kizamezuki	25.38 $\pm$ 4.789
Experimental	Posttest_Kizamezuki	35.31 $\pm$ 2.029
Experimental	Pre-test_Maegeri	23.97 $\pm$ 7.258
Experimental	Posttest_Maegeri	36.03 $\pm$ 2.113
Control	Pretest_Push-Up	26.53 $\pm$ 3.234
Control	Post-test_Push-ups	28.46 $\pm$ 3.319
Control	Pretest_Sit-Up	31.13 $\pm$ 3.059
Control	Post-test_Sit-ups	33.03 $\pm$ 2.988
Control	Pretest_Back Up	33.63 $\pm$ 2.760
Control	Posttest_Backup	35.43 $\pm$ 2.674
Control	Pretest_Squat	36.66 $\pm$ 2.940
Control	Post-test_Squat	38.60 $\pm$ 2.823
Experimental	Pretest_Push-Up	27.03 $\pm$ 3.295
Experimental	Post-test_Push-ups	35.20 $\pm$ 3.736

Experimental	Pretest_Sit-Up	30.56 ± 2.648
Experimental	Post-test_Sit-ups	39.46 ± 3.308
Experimental	Pretest_Back Up	34.166 ± 2.901
Experimental	Posttest_Backup	43.03 ± 3.285
Experimental	Pretest_Squat	35.333 ± 2.901
Experimental	Post-test_Squat	45.76 ± 3.308

Table 2 shows a descriptive analysis of a substantial increase in the mean (Mean ± SD) scores in the experimental group compared to the control group across all variable indicators. The experimental group's life skills scores showed a rapid increase across all aspects, such as cooperation (pretest 22.50 ± 2.030 – posttest 32.00 ± 1.722) and goal setting (pretest 21.90 ± 1.936 – posttest 31.43 ± 1.924). Meanwhile, the control group showed only partial improvements, such as in cooperation (pretest 22.50 ± 2.030 – posttest 23.23 ± 1.775). Regarding technical skills, the average technical scores in the

experimental group increased in the posttest (Gyakuzuki 36.21 ± 1.719; Kizamizuki 35.31 ± 2.029; Maegeri 36.03 ± 2.113) compared to the control group's posttest results (Gyakuzuki 33.31 ± 2.238; Kizamizuki 33.48 ± 2.029; Maegeri 33.14 ± 2.031). Physical performance scores in the experimental group showed a higher average increase in the posttest (push-ups 35.20 ± 3.736; sit-ups 39.46 ± 3.308; back-ups 43.03 ± 3.285; squat 45.76 ± 3.308) compared to the post-test improvements in the control group (push-ups 28.46 ± 3.319; sit-ups 33.03 ± 2.988; back-ups 35.43 ± 2.674; squats 38.60 ± 2.823)

Table 3. Kolmogorov-Smirnov normality test

Group	Variable	Sig	Description
Control	Pretest_Cooperation	0.200*	Normal
Control	Posttest_Cooperation	0.137	Normal
Control	Pretest_Goal Setting	0.200*	Normal
Control	Posttest_Goal Setting	0.200*	Normal
Control	Pretest_Time Management	0.136	Normal
Control	Posttest_Time management	0.171	Normal
Control	Pretest_Emotional Skills	0.096	Normal
Control	Posttest_Emotional Skills	0.123	Normal
Control	Pretest_Interpersonal Communication	0.089	Normal
Control	Posttest_Interpersonal Communication	0.051	Normal
Control	Pretest_Social Skills	0.051	Normal
Control	Posttest_social skill	0.149	Normal
Control	Pretest_Leadership Skill	0.096	Normal
Control	Posttest_Leadership Skill	0.200*	Normal
Control	Pretest_Problem Solving	0.053	Normal

Control	Posttest_Problem Solving	0.059	Normal
Experimental	Pretest_Cooperation	0.200*	Normal
Experimental	Posttest_Cooperation	0.200*	Normal
Experimental	Pretest_Goal Setting	0.200*	Normal
Experimental	Posttest_Goal Setting	0.200*	Normal
Experimental	Pretest_Time Management	0.182	Normal
Experimental	Posttest_Time management	0.056	Normal
Experimental	Pretest_Emotional Skills	0.123	Normal
Experimental	Posttest_Emotional Skills	0.056	Normal
Experimental	Pretest_Interpersonal Communication	0.056	Normal
Experimental	Posttest_Interpersonal Communication	0.057	Normal
Experimental	Pretest_Social Skills	0.122	Normal
Experimental	Posttest_social skill	0.052	Normal
Experimental	Pretest_Leadership Skill	0.123	Normal
Experimental	Posttest_Leadership Skill	0.051	Normal
Experimental	Pretest_Problem Solving	0.051	Normal
Experimental	Posttest_Problem Solving	0.061	Normal
Control	Pretest_Gyakuzuki	0.200	Normal
Control	Posttest_Gyakuzuki	0.200	Normal
Control	Pretest_Kizamizuki	0.200	Normal
Control	Posttest_Kizamizuki	0.118	Normal
Control	Pretest_Maegeri	0.200	Normal
Control	Posttest_Maegeri	0.096	Normal
Experimental	Pretest_Gyakuzuki	0.200	Normal
Experimental	Posttest_Gyakuzuki	0.142	Normal
Experimental	Pretest_Kizamizuki	0.152	Normal
Experimental	Posttest_Kizamizuki	0.200	Normal
Experimental	Pretest_Maegeri	0.200	Normal
Experimental	Posttest_Maegeri	0.088	Normal
Control	Pretest_Pushup	0.084	Normal
Control	Posttest_Pushup	0.059	Normal
Control	Pretest_Backup	0.200	Normal
Control	Post-test_Backup	0.155	Normal

Control	Pretest_Squat	0.200	Normal
Control	Pretest_Squat	0.200	Normal
Control	Pretest_Sit-up	0.059	Normal
Control	Posttest_Situps	0.200	Normal
Experimental	Pretest_Pushup	0.074	Normal
Experimental	Posttest_Pushup	0.076	Normal
Experimental	Pretest_Backup	0.163	Normal
Experimental	Post-test_Backup	0.052	Normal
Experimental	Pretest_Squat	0.052	Normal
Experimental	Pretest_Squat	0.159	Normal
Experimental	Pretest_Sit-up	0.052	Normal
Experimental	Posttest_Situps	0.200	Normal

Table 3 shows the Kolmogorov-Smirnov test data for all variables in the control and experimental groups. The results show that all significance values (p-values) are above the threshold of $\alpha = 0.05$ ($p > 0.05$). This indicates

that the variables life skills, technical skills, and physical abilities are normally distributed, so all variables meet the requirements for parametric inferential analysis.

Table 4. Levene's Test of Homogeneity

Variable	Levene	Df1	Df2	Sig	Description
Collaboration	0.067	1	58	0.797	Homogeneous
Goal setting	0.064	1	58	0.801	Homogeneous
Time management	0.010	1	58	0.919	Homogeneous
Emotional	0.144	1	58	0.705	Homogeneous
Interpersonal communication	0.323	1	58	0.572	Homogeneous
Social	0.323	1	58	0.572	Homogeneous
Leadership	0.513	1	58	0.477	Homogeneous
Problem Solving	0.211	1	58	0.648	Homogeneous
gyakuzuki	0.939	1	56	0.052	Homogeneous
Kizamizuki	0.366	1	56	0.547	Homogeneous
Mageri	0.050	1	56	0.824	Homogeneous
Push-up	0.029	1	58	0.866	Homogeneous
Backup	0.246	1	58	0.269	Homogeneous
Sit-ups	0.021	1	58	0.885	Homogeneous
Squat	0.156	1	58	0.287	Homogeneous

Table 4 shows the test for homogeneity of variances using Levene's test of equality of variances. The results show that all variables have a significance level of $p > 0.05$, such as (cooperation $p = 0.797$; push-ups $p = 0.866$;

gyakuzuki $p = 0.052$). These results indicate that the variances between the control and experimental groups are homogeneous, meaning that the two groups have equal variances before and after the intervention.

Table 5. Independent t-test

Group – Variable	Post-test Mean	Sig	Cohen's d
Control – Cooperation	23.23	.000	0.013
Experimental – Cooperation	32.00		
Control – Goal setting	22.43	.000	0.552
Experimental – Goal setting	31.43		
Control – Time Management	15.77	.000	0.837
Experimental – Time management	22.67		
Control – Emotional	15.10	.000	0.322
Experimental – Emotional	21.87		
Control – Social	15.63	.000	0.886
Experimental – social	22.43		
Control – interpersonal communication	12.63	.000	0.735
Experimental – interpersonal communication	17.63		
Control – Leadership	15.17	.000	0.199
Experimental – Leadership	21.87		
Control – Problem Solving	15.63	.000	0.326
Experimental – Problem Solving	22.53		
Control – Gyakuzuki	33.48	.015	0.846
Experiment – Gyakuzuki	35.31		
Control – Kizamizuki	33.31	.001	0.452
Experiment – Kizamizuki	36.21		
Control – Maegeri	33.14	.001	0.398
Experiment – Mageri	36.03		
Control – Push-ups	28.47	.001	0.905
Experimental – Push-ups	35.20		
Control – Sit-ups	33.03	.001	0.041
Experimental – Sit-ups	39.47		
Control – Backup	35.43	.001	0.537
Experiment – Backup	43.03		
Control – Squat	38.60	.001	0.984
Experimental – Squat	45.77		

Table 5 presents the results of the independent samples t-test and effect sizes to address the research question regarding the difference in the effects of the “sport value” training model and the conventional training model; an independent samples t-test was conducted on the posttest scores. The results for life skills showed a statistically significant difference between the experimental and control groups on all indicators ($p < 0.001$). A high-category intervention effect was found for the variables time management ($d = 0.837$), social skills ($d = 0.886$), and interpersonal communication ($d = 0.735$), while the goal-setting variable ($d = 0.552$) fell into the moderate category, and cooperation ($d = 0.013$) and leadership ($d = 0.199$) were classified as practically small effects, although statistically significant. For technical skills, there was a significant difference in posttest scores between the two groups ($p < 0.05$). Interventions with large effects included the gyakuzuki technique ($p = 0.015$, $d = 0.846$), while those with moderate effects included kizamizuki ($p = 0.001$, $d = 0.452$) and maegeri ($p = 0.001$, $d = 0.398$). Physical ability test results showed significant differences in all physical components ($p=0.001$). The “sport value” training model proved effective in improving physical capacity with very high effect sizes for squats ($d=0.984$), push-ups ($d=0.905$), and back-ups ($d=0.537$).

4. Discussion

The purpose of this study was to examine the effectiveness of a sport value-based training model in improving physical ability, basic karate techniques, and life skills among young karateka (ages 13–14). Results from the independent samples t-test showed that the experimental group, which implemented the sport value-based training model, experienced significant improvements compared to the control group ($p < 0.05$) in all three aspects.

All indicators of life skills showed a significant improvement ($p < 0.001$), with the highest impact of the intervention observed in social skills ($d = 0.886$), time management ($d = 0.837$), and interpersonal communication ($d = 0.735$). In the basic karate techniques aspect, there was a

significant improvement, with the gyakuzuki punch technique showing the highest effect size ($d = 0.846$), followed by the kizamizuki ($d = 0.452$) and the maegeri kick ($d = 0.398$). In terms of physical aspects, the experimental group demonstrated remarkable improvements in physical capacity, particularly in lower-body muscle endurance through squats ($d = 0.984$) and upper-body muscle endurance through push-ups ($d = 0.905$), both with very high effect sizes. The superior improvement in the experimental group occurred because the sport-value-based training model did not merely treat sports values as theoretical memorization but directly integrated them into physical structure and technique through measurable training station scenarios.

The integration of physical training and integrity—as seen in movements like the bear crawl, crab walk, and duck wall—combined with disciplined and honest instruction on basic techniques, compels karateka to maintain movement quality even when fatigued. This explains why physical capacity and technical precision improved rapidly in tandem. Strengthening psychosocial aspects—such as the paired use of punching pads—creates a space for active interaction through direct feedback. This structure stimulates interpersonal communication skills, social sensitivity, and problem-solving abilities in real-world field settings. Furthermore, guided reflection during a 20-minute discussion session at the end of the training reinforces the internalization of life skills. Athletes are encouraged to articulate their emotions and self-regulation strategies when facing intense physical demands.

These findings are supported by studies indicating that martial arts have great potential for developing life skills and independence when systematically designed (Xu et al., 2026), and that interactive and collaborative physical activities are effective in promoting moral, social, and emotional development (Bronikowska et al., 2024; Kuspratiwi et al., 2026; Zhou & Colomer, 2024), significant improvements in emotional and communication variables confirm that a conducive training environment directly

influences athletes' mastery of life skills (Sulistiyono et al., 2024; Sulistiyono, Sugiyanto, et al., 2021), another study states that structured karate training interventions can accelerate karateka's life skills (Dewangga et al., 2025; Putriani & Yudhistira, 2024; Yulfadinata et al., 2025).

Furthermore, these findings align with the concept of long-term athlete development (Balyi & Way, 2014; Dowling et al., 2020; Ropret & Jevtić, 2019). This reinforces that youth sports development should ideally not focus solely on physical and technical specialization in isolation, but rather integrate physical, technical, tactical, mental, and life skills holistically from an early age, thereby laying the foundation for long-term performance and sustained participation in sports (Balyi & Way, 2014; Dowling et al., 2020; Ropret & Jevtić, 2019). Karateka in the 13–14 age group are in the pubertal period, a time of rapid biological and psychosocial adaptation (Gholami et al., 2024; Irawan & Yudhistira, 2026). Conventional approaches tend to be more technically or physically centered, which risks causing burnout, competition anxiety, and a decline in ethical integrity due to a lack of foundational character development.

The integration of the sport value education model in this study has proven to dispel the notion that instilling sport values will reduce the proportion of physical and technical training. On the contrary, in accordance with the LTAD framework, the incorporation of values such as honesty, emotional regulation, goal setting, and teamwork into station-by-station training scenarios acts as a systematic accelerator in holistic training development. The primary novelty of this study is the simultaneous integration of the sports values training model to enhance the basic techniques, life skills, and physical abilities of young karateka. The sports values model in this study successfully demonstrated that the instillation of sports values can be directly incorporated into physical and technical training without sacrificing or reducing the quality of physical or technical achievements themselves.

Although this study offers practical contributions, there are limitations: the study involved only male participants aged 13–14 years with 1–2 years of training experience, so the generalizability of the findings remains limited; the intervention lasted 6 weeks with a uniform/fixed training regimen to maintain the model's effectiveness; however, this duration was insufficient to measure the long-term effects of internalized sport values once athletes returned to environments outside of training or official competitions; Although the life skills instrument was administered under the supervision of the researchers, there is a potential for bias in participants' responses when assessing their own skills; testing of basic techniques was limited to three fundamental techniques, so it did not measure combination techniques or their application in the context of simulated combat and forms.

Future research directions include expanding the sample to include women and comparing results across various developmental phases—such as the “active start” phase, “learning to train,” and “learning to compete”—to examine gender and age-related adaptations; implementing long-term designs such as longitudinal studies, which is important for testing the extent to which the developed life skills and sports values persist permanently in daily life as well as under competitive pressure; and combining life skills assessment instruments—such as questionnaires and in-depth interviews—with direct behavioral observation to yield higher-quality data.

5. Conclusion

Summarize key findings It is concluded that the sports values education model, when directly integrated into training sessions, proved to be more effective than conventional training models in improving physical abilities, life skills, and technical skills among young karateka ($p < 0.05$). This resulted in a high effect size for physical abilities, particularly lower-body muscle endurance (squat, $d = 0.984$) and upper-body muscle endurance (push-up, $d = 0.905$), as well as the precision of the *gyakuzuki* strike technique ($d = 0.846$). On the other hand, the accumulation

of life skills experienced substantial acceleration ($p < 0.001$), with dominant improvements in social skills ($d = 0.886$), time management ($d = 0.837$), and interpersonal communication ($d = 0.735$). These findings reinforce the concept of long-term athlete development, which holds that the physical, technical, and psychosocial

dimensions must be nurtured holistically from an early stage. In practical terms, this model provides concrete guidelines for karate coaches to design integrated training programs that focus not only on achieving competitive success but also on building a foundation of character and sustainable life skills.

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