



Development of Teaching Program by Applying Target Goal Achievement to Enhance the Table Tennis Skills in Secondary School Students

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Abstract

Background and Aim: Table tennis has become an essential part of physical education programs at every level of education. An era that prioritizes individual abilities and differentiation is ushered in by teaching approaches that place a strong emphasis on active learning and student interaction. This research aimed to construct a training program by adding goals achieved to enhance table tennis skills in secondary school students.

Materials and Methods: This research was a quasi-experiment research. The subjects were 40 students in grade 7th of junior high schools, they were selected from 70 students of 2 classes by testing table tennis skills, then ranked the scores and applied a systematic sampling method to divide into an experiment group and a control group. The research tools were interviews from, a table tennis teaching program by applying goal achievement to enhance skills. questionnaire to evaluate the teaching and learning process by students. The program was validated by 3 experts and got IOC= 0.85 (0.66-1.00), and the efficiency by trying out with 30 students and got E1/E2 = 71.69/70.48. The experiment was a group's pretest-posttest training program for 8 weeks, 2 sessions a week, and 1.30 hours a session. The researcher monitored and evaluated the goal achievement of the experiment group on week 3rd week 6th and week 8th, while the control group was taught by the traditional table tennis program. The data were analyzed by mean, standard deviation, and percentage, and compare the pretest and posttest with the t-test.

Result: The result revealed that (1) The table tennis skills in the posttest of both the control group and the experiment group were higher than the pretests at a .05 level of significance. (2) The table tennis skills in the posttest of the experiment group were higher than the posttest of the control group at 0.05 level of significance. And (3) The program was evaluated by the students in the experiment group was at high agree (4.47+-1.53)

Conclusion: The results of the study suggest that both the control and experiment groups' post-intervention table tennis skills significantly improved, with the experiment group developing their skills more than the control group. Additionally, the experiment group's student assessments show a high degree of agreement regarding the program's efficacy. Thus, the developed teaching program by adding goal achievement had efficiency and effectiveness.

Keywords: Table Tennis Teaching Program; Goal Achievement; Adding Goal Achievement into a Teaching Program

Introduction

The purpose of physical education class was to develop physical, intellectual, mental, and social through active participation in selected exercises, games, sports, and physical activities. Physical fitness is an essential component of leading a wholesome life, so the main objective in physical education class is usually to guide the student to participate the routine fitness activities and into their daily routines to stay active and healthy. The NASPE (2003) recommends that children obtain a minimum of 60 minutes of physical activity in a day. It is not possible in most schools to provide 60 minutes of daily physical activity for every student through the physical education program alone; this has led to the development of the idea of having comprehensive school physical activity programs. The physical education teachers are to provide maximum physical activity time within the class period, teach skills and activities that transfer into physical activity outside of physical education class, motivate children to be physically active, and take the role of physical activity director for the school. If students are to receive the amount of physical activity they need each day, other opportunities to be physically active within the school day must be provided. The physical education teachers have to create and choose a teaching method and activities to stimulate and motivate the students to pay their efforts, interest, and engagement, in the teaching and learning in physical education class.

Table tennis was one of the sports which set as required in physical education courses. It was a popular sport among students in every education level from primary school through college and



university. The teaching methods at present and the next era focus on active learning, student-centered, and interested in students' ability and differentiation. One of the difficulties for teachers is "encouraging the students to stay involved in the lesson (or the classwork) because there are so many more attractive things to do in the time and age we live" (speakeragency.co.uk, blog, 2023). Most of the sport teaching in physical education usually teach all the student in the same activities, there rarely divided the students into groups of performance levels or individual performance. The teaching methods most used were demonstration, individual practice, group practice, and evaluation by observation, midterm tests, and final tests. (Aksović, et al, 2023).

Differentiated instruction was another type of teaching method that emphasized meeting the diverse needs of students in the classroom. This approach recognizes that every student has unique learning styles, abilities, and backgrounds, and seeks to create a learning environment that accommodates these differences and allows the teachers to tailor their instruction to meet the specific needs of each student. By offering a variety of learning activities and assessments, teachers can help students build on their strengths and work on areas where they need improvement. Additionally, this approach can be effective for promoting student engagement, as students can take an active role in their learning, but it might be difficult for the teachers to manage different activities and assessments for each student, particularly in larger classrooms, some students might struggle with the independent nature of this approach and may require more guidance and structure to be successful. The differentiation of teaching affects effective student engagement and success, it might require more planning and preparation on the part of the teacher, and might not be suitable for all students. By understanding the strengths and weaknesses of different teaching methods, educators can create engaging and effective lesson plans that help students develop the skills and knowledge they need to succeed. (vietnamteachingjobs.com 2023)

In conclusion, differentiated instruction is another type of teaching method that emphasizes meeting the diverse needs of students in the classroom. While it can be effective for promoting student engagement and accommodating different learning styles, it may require more planning and preparation on the part of the teacher, and may not be suitable for all students. By understanding the strengths and weaknesses of different teaching methods, educators can create engaging and effective lesson plans that help students develop the skills and knowledge they need to succeed.

Goal setting was a learning and development technique, it was a systematic process to enhance skills, knowledge, and competency, resulting in better performance in a work setting. (indeed.com, 2023). Applying the achieved goal program of teaching in table tennis class might be advantageous to the success of student learning because it could be the ways of motivation to learn, tailor-made learning styles for the student, and response to the differentiate of students. These could lead to lifelong working behavior of students.

The key principles for goal achievement were five key principles for successful goal achievement (Locke & Latham, 1990). They were Commitment, Clarity of target goal setting, Challenge of goal, Task complexity, and Feedback. These were the important keywords to form the target goal in the table tennis program by setting the challenge and clarifying the goal, motivating them to keep up the practice, give them feedback and additional assignments to do after class.

Mark Pettit (2021) wrote the 9 reasons for the benefit of goal setting, goals provide focus, goals provide direction, goals clarify your future, goals prioritize your time, goals increase your confidence, goals provide motivation, goals help you measure progress, goals increase productivity, and goals build capabilities.

As reviewed in the previous research, there was not much research on the application of goalsetting or goal achievements in teaching and learning. The researcher is a graduate student in physical education and a table tennis teacher in school who considered that the application of goal setting into a teaching method is beneficial to improving body condition and skills in table tennis. so decided to do this research.

Objectives

1. To develop a teaching program by adding goal achievement to enhance the table tennis skills of the secondary school students.



2. To verify the efficiency and effectiveness of the teaching program in table tennis by adding goal achievement on validity, efficiency, and results of the experiment.
3. To evaluate the level of agreement on the teaching and learning process.

Hypothesis

The students taught by the developed teaching program by adding goal achievement could gain more performance in table tennis skills than the students who were taught by traditional table tennis teaching program.

Definition of Terms

Goal setting: Goal setting is a technique of motivation and evaluation to achieve the expected target of a task. In this table tennis teaching, the goal setting was a decision of the student to predict a result score of tests which they could do by considering the difficulty of the test, and ability to achieve.

Goal achievement: The success of test scores that the students set as a target before the test in the next assigned tests.

Level of target goal setting: The defined range of goal setting strength is divided by 5 levels from 0-100 percent of full score. 00-25 % = very low, 26-40 % = low, 41-65 % = moderate, 66-85 % high, 86-100 % = very high

Table tennis teaching program by applying target goal setting: The teaching plan in table tennis in which the teacher and students set the expected score of tests to achieve at each test. of each student before starting a period of each program plan. If the students did not achieve the target goal, they had to do additional assignments the gain more experience to achieve the target goal in the next period. But the other students who meet or above the target goal would not get any assignments except the ones who were low performance may be assigned to practice to gain more level of performance

Table tennis skills performance: the ability to perform skills to reach the full scores of each test on return feeding balls, rally, single-serve, and double-serve.

Table tennis skill tests: a test of the returning feeding balls by the teacher (20 points), a test of serves in single plays (20 points) and double plays (20 points), a test of the rally with the experienced knocker or teacher (20 points)

Literature Review

Development of Table Tennis Teaching Program

Table tennis or Ping-pong, another name for table tennis, is a widely recognized sport that calls for dexterity, accuracy, and strategic thinking. It takes careful consideration of several aspects, such as skill progression, training approaches, and instructional techniques, to develop a successful table tennis teaching program. The purpose of this paper is to provide an overview of the fundamental elements of a thorough table tennis instruction program by referencing scholarly works and the advice of domain experts.

Skill Progression and Curriculum Design

The first step in creating a table tennis instruction program is determining the benchmarks for skill advancement. A well-designed curriculum should start with basic abilities like grip, stance, footwork, and stroke techniques and work its way up to more complex strategies, spin variations, and match tactics (Hodges & Bunker, 2019). A detailed definition of each skill level is necessary to enable methodical advancement and ongoing evaluation of player development. Drills and practice routines that are customized for every ability level are incorporated to guarantee a thorough learning experience and promote skill mastery over time.

Training Methodologies and Pedagogical Approaches

A table tennis teaching program's effectiveness is largely dependent on its training approaches. Acquisition and retention of skills are facilitated by combining practice-based learning, explanation, and demonstration (Guo, 2018). According to Kwok and Yang (2020), the integration of feedback systems, such as video analysis and tailored coaching, results in improved player performance and expedited skill development. Moreover, using game-based learning strategies increases student



engagement and improves the transfer of knowledge into competitive environments (Zhang et al., 2021). To maximize the efficacy of the teaching program, coaches can accommodate the unique learning preferences and styles of each player by utilizing a variety of pedagogical approaches.

Psychological and Physiological Considerations

Comprehending the psychological and physiological facets of table tennis is crucial in formulating a comprehensive educational initiative. Psychological elements including resilience, drive, and focus have a big influence on how well players perform and learn (Li et al., 2017). According to Chang et al. (2019), players can improve their mental toughness and confidence by incorporating visualization techniques, goal-setting, and mental skills training. This will help them perform better overall on the table. Additionally, the design of conditioning workouts and training protocols targeted at maximizing player physical preparedness takes into account the physiological demands of table tennis, including aerobic and anaerobic fitness, strength, and flexibility (Wang et al., 2020).

Evaluation and Continuous Improvement

A great table tennis teaching program must include evaluation and ongoing development. Coaches can discover areas for improvement and adjust training methods by regularly assessing player performance and growth (Chow et al., 2018). Insights into the program's efficacy are obtained from player, coach, and stakeholder feedback, which also guides upcoming changes and modifications (Song & Tang, 2021). Coaches may guarantee that the teaching program stays pertinent and sensitive to the changing requirements of players and the larger table tennis community by adopting a culture of ongoing learning and adaptation.

To sum up, significant thought must be given to the establishment of a table tennis instruction program, including skill progression, training approaches, physiological and psychological aspects, and evaluation procedures. Through the integration of pedagogical techniques and evidence-based practices, coaches can design an all-encompassing learning experience that not only improves performance but also nurtures skill development and ignites a lifetime enthusiasm for the sport.

Conceptual Framework

Methodology

1. Populations and Samples

The population was primary school students in China which scope on grade 7th: The sample for the experiment was 40 students, in grade 7th of secondary school. They tested table tennis skills and ranked the scores, then systematic matching sampling into two groups and drew into an experiment group and a control group

Inclusion of samples: The samples that participated in this experiment must accepted to participate in the 16 sessions, for 8 weeks with 2 sessions of 1.30 hours a week,

Exclusion of samples: The sample could be notified to leave the research preparticipation any time they want.

2. Research instrument

- Interviewing form to interview experts.
- Teaching program by adding goal achievement to enhance the table tennis skills for secondary students, which had IOC = IOC = 0.85 (0.66-1.00) and efficiency = E1/E2 = 71.69 / 70.48
- Traditional table tennis teaching program.
- Questionnaire to evaluate the teaching and learning process of the students.

3. Research Process

This research was divided into 5 stages as follows:

Stage 1 Gathering the concepts and opinions of experts concerned with the goal-setting technique added in a table tennis teaching program

The researcher reviewed the literature and drafted the interviewing form to collect the opinions from 9 experts and concluded as follows:

1. The lesson plan was 8 weeks, 2 sessions a week, 1.30 hours a session
2. The basic skills in table tennis for grade 7th students consisted of;



- 2.1 Foot works and hand works
- 2.2 Bat handle of grips
- 2.3 Forehand stroke production
- 2.4 Backhand stroke production
- 2.5 Types of Strokes
- 2.6 Flat; Top spin, Backspin
- 2.7 Serves; Single play, Double play
- 2.8 Rules and Regulations of table tennis
- 2.9 Physical fitness
- 2.10 Table tennis skills test.
3. Goal setting principle and practice.
 - 3.1 Importance of goal setting
 - 3.2 How to set a goal
 - 3.3 The teaching process is based on a goal-setting strategy. revision of goals in each period.

Stage 2 Selected a table tennis skills test.

The researcher reviewed the literature and consulted experienced teachers in table tennis for primary school students. And considered the battery test for table tennis developed by Amnoury Reunrerng (2001) comprised of table tennis rally test, and a table tennis serving test, The reliability and validity of the test were .81 and .92, respectively, and were significant at .01

Stage 3 Draft and validate the table tennis teaching program.

To confirm the quality of the program by experts to find the Indexes of Item Objectives Congruence (IOC) with 3 experts

Stage 4. Try out with small groups to clarify the language and complete the process of the program.

1. Purposive selected one student to learn with a researcher through a brief process of each lesson, observation, and test of understanding, after that the researcher adjusted some of them to complete the program.

2. Tryout with a small group of students to check the complete process, and then try out with 30 students to find the efficiency of the program $E/E_2 = 70/70$

Stage 5 Operate a two-group experiment

The researcher selected 40 students to be the subjects of the research. Divided them into two groups based on table tennis skills test score on return feeding ball 20 points. rally 20 points and serve 20 points the ranked the score and sampling by matching techniques into 20 each group. The experimental group taught the table tennis teaching program by adding target goal achievement, the subjects were taught goal setting and practice before starting table tennis teaching and assigned to set target goals and check the achievement at week 2nd, week 4th, and week 6th, and assigned additional practice for them who did not meet to goals. The control group taught with the same program but did not set the target goals. Analysis of table tennis skill test scores between the pretest and posttest.

Stage 6 Evaluation of teaching program by students

1. Construct and develop a questionnaire to evaluate the teaching program
2. Delivery of questionnaire to the students in the experimental group
3. Analyzed and concluded

The result of the Experiment

The monitoring of goal achievement of the subjects in the experiment group showed that at Week 4th there were 14 subjects achieved goals (4 met and 10 above) and 6 did not achieve, at week 6th, there 14 subjects achieved goals (6 met and 8 above) and 6 did not achieve a week, there were 14 subjects were achieved goals (4 meet and 10 above) and 6 did not achieve, at week 8th, there were 17 subjects were achieved goals (5 meet and 12 above), while 3 did not achieve a week. (see table 1)



Table 1 the summation of goal achievement at week 4th week 6th and week 8th of the subjects in the experiment group

| Students | Sex | Week 4 th | | Week 6 th | | Week 8 th | |
|-----------------------------|-----|----------------------|--------|----------------------|--------|----------------------|--------|
| | | Goal (40 pts) | Result | Goal (40 pts) | Result | Goal (80 pts) | Result |
| Student 1 | M | 31 | Above | 38 | Above | 69 | Above |
| Student 2 | M | 35 | Below | 39 | Meet | 70 | Above |
| Student 3 | M | 34 | Above | 38 | Meet | 68 | Above |
| Student 4 | M | 31 | Above | 37 | Above | 69 | Below |
| Student 5 | M | 32 | Below | 38 | Meet | 62 | Meet |
| Student 6 | M | 30 | Meet | 39 | Meet | 64 | Below |
| Student 7 | M | 35 | Meet | 36 | Above | 65 | Meet |
| Student 8 | M | 33 | Below | 37 | Meet | 70 | Below |
| Student 9 | M | 35 | Below | 39 | Below | 61 | Meet |
| Student 10 | M | 28 | Above | 39 | Below | 62 | Above |
| Student 11 | M | 27 | Below | 38 | Below | 62 | Meet |
| Student 12 | M | 25 | Above | 37 | Above | 66 | Above |
| Student 13 | F | 30 | Meet | 36 | Above | 63 | Above |
| Student 14 | F | 29 | Above | 35 | Above | 69 | Above |
| Student 15 | F | 28 | Meet | 37 | Below | 70 | Meet |
| Student 16 | F | 29 | Meet | 38 | Below | 61 | Above |
| Student 17 | F | 28 | Above | 39 | Below | 64 | Meet |
| Student 18 | F | 28 | Above | 38 | Meet | 72 | Above |
| Student 19 | F | 20 | Above | 35 | Above | 65 | Above |
| Student 20 | F | 34 | Below | 37 | Above | 63 | Meet |
| Summarized goal achievement | | Below | 6 | Below | 6 | Below | 3 |
| | | Meet | 4 | Meet | 6 | Meet | 5 |
| | | Above | 10 | Above | 8 | Above | 12 |

The pretest and posttest scores on table tennis skills tests

The data of total table tennis skills test scores in 4 tests (feeding, rally, single-serve, and double serve) in the pretest and posttests of the experiment group and the control group showed that the subjects were 40 students consisting of 8 females and 12 males in each group. The control group test results on 4 tests (feeding, rally, single-serve, and double serve) total 80 points in the control group, the average \pm standard deviation at the pretest was 46.30 \pm 3.06 and at the posttest was 55.15 \pm 2.87, in experiment group at the pretest were 46.05 \pm 5.06, and at the posttest were 61.95 \pm 2.85 (see table 2)

Table 2 The data of total table tennis skills test scores in 4 tests (feeding, rally, single-serve, and double serve) in the pretest and posttests of the experiment group and the control group

| Control group (80 points) | | | | Experiment Group (80 points) | | | |
|---------------------------|-----|---------|----------|------------------------------|-----|---------|----------|
| Subjects | Sex | Pretest | Posttest | Subject | Sex | Pretest | Posttest |
| Cont. 1 | M | 50.00 | 60.00 | Exp 1 | M | 47.00 | 63.00 |
| Cont. 2 | M | 53.00 | 56.00 | Exp 2 | M | 56.00 | 61.00 |
| Cont. 3 | M | 51.00 | 61.00 | Exp 3 | M | 50.00 | 65.00 |
| Cont. 4 | M | 48.00 | 59.00 | Exp 4 | M | 49.00 | 60.00 |
| Cont. 5 | M | 45.00 | 58.00 | Exp 5 | M | 51.00 | 64.00 |
| Cont. 6 | M | 47.00 | 55.00 | Exp 6 | M | 52.00 | 65.00 |
| Cont. 7 | M | 50.00 | 57.00 | Exp 7 | M | 52.00 | 57.00 |
| Cont. 8 | M | 46.00 | 55.00 | Exp 8 | M | 50.00 | 61.00 |
| Cont. 9 | M | 44.00 | 55.00 | Exp 9 | M | 49.00 | 65.00 |
| Cont. 10 | M | 44.00 | 51.00 | Exp 10 | M | 42.00 | 60.00 |
| Cont. 11 | M | 44.00 | 52.00 | Exp 11 | M | 44.00 | 64.00 |



| Control group (80 points) | | | | Experiment Group (80 points) | | | |
|---------------------------|-----|---------|----------|------------------------------|-----|---------|----------|
| Subjects | Sex | Pretest | Posttest | Subject | Sex | Pretest | Posttest |
| Cont. 12 | M | 46.00 | 55.00 | Exp 12 | M | 44.00 | 62.00 |
| Cont. 13 | F | 43.00 | 54.00 | Exp 13 | F | 42.00 | 58.00 |
| Cont. 14 | F | 44.00 | 50.00 | Exp 14 | F | 36.00 | 60.00 |
| Cont. 15 | F | 42.00 | 55.00 | Exp 15 | F | 38.00 | 66.00 |
| Cont. 16 | F | 42.00 | 53.00 | Exp 16 | F | 42.00 | 64.00 |
| Cont. 17 | F | 46.00 | 52.00 | Exp 17 | F | 46.00 | 59.00 |
| Cont. 18 | F | 49.00 | 56.00 | Exp 18 | F | 43.00 | 63.00 |
| Cont. 19 | F | 47.00 | 55.00 | Exp 19 | F | 45.00 | 57.00 |
| Cont. 20 | F | 50.00 | 60.00 | Exp 20 | F | 43.00 | 65.00 |
| \bar{x} | | 46.30 | 55.15 | \bar{x} | | 46.05 | 61.95 |
| SD | | 3.06 | 2.87 | SD | | 5.06 | 2.85 |

The comparison of the total table tennis skills tests in 4 skills tests (feeding, rally, single-serve, and double serve) with group by t-test between the pretest and posttests of the experiment group and the control group showed that in both the experiment group and control group could improve more skills in table tennis after teaching and learning table tennis which showed that in the experiment group, the pretest was average 46.05 and standard deviation was 50.6 and the posttest was average 61.95 and standard deviation was 2.85, the t- value was 12.03 and p-value was .001, it showed that the posttest was higher than the pretest at .05 level of significance. In the control group, the pretest and posttest control group, the pretest had an average of 46.30 and the standard deviation was 3.06 the posttest had an average of 55.15 and the standard deviation was 2.87, the t- t-value was 15.845 and p-value was .001, it showed that the posttest was higher than the pretest at .05 level of significance. (see Table 3).

Table 3 The comparison of total scores of the pretest and the post-test (80 points) within the experiment group and the control group by paired t-test

| Tests | Groups | Mean | SD | t | p |
|--------------------|----------|-------|------|--------|-------|
| Experimental group | Pretest | 46.05 | 5.06 | 12.103 | .001* |
| | Posttest | 61.95 | 2.85 | | |
| Control. group | Pretest | 46.30 | 3.06 | 15.845 | .001* |
| | Posttest | 55.15 | 2.87 | | |

*p <.05

The comparison of the total table tennis skills tests in 4 skills tests (feeding, rally, single-serve, and double serve) by t-test between the experiment group and the control group on the pretest and post-test showed that, at the pretest, the scores of 4 skills tests in table tennis of the control group and the experimental group had no difference at .05 level of significance, but at the post-test had difference at .05 level of significance. (see table 4)

Table 4 The comparison of pretest and post-test between the experimental group and the control group

| Tests | Groups | Mean | SD | t | p |
|-----------|--------------------|-------|------|-------|-------|
| Pretest | Experimental group | 46.05 | 5.06 | 1.323 | .851 |
| | Control. group | 46.30 | 3.06 | | |
| Post-test | Experimental group | 61.95 | 2.87 | 7.511 | .001* |
| | Control. group | 55.15 | 2.87 | | |

*<p.05 level of significance

The evaluation of the teaching program by students in the experiment group

The researcher developed a questionnaire to collect the students' opinions on the satisfaction and practicality of the added target goal-setting technique in teaching program in table tennis to secondary school students and delivered it to the students after finishing 8 weeks of program operation, the result showed that the student rated at 3.86-4.62. There were at a high level 10 out of 11 issues. These mean

that the program was satisfactory, practical, and useful to apply to table tennis teaching for secondary school students. (see table 5)

Table 5 The mean and standard deviation of the opinion survey on the teaching program of the students in the experimental group (n=20)

| No | Issues | \bar{x} | SD |
|--------------|---|-------------|-------------|
| 1 | Understanding on goal setting knowledge and practice | 4.50 | 1.30 |
| 2 | The sequence of content and practice of the program | 4.00 | 1.89 |
| 3 | Appropriateness of the tests in each session | 3.86 | 2.00 |
| 4 | Target goal setting motivates you to try more than the teaching program that you learned before | 4.52 | 1.60 |
| 5 | The assignments were useful in improving your skills | 4.15 | 1.88 |
| 6 | How much do you try to achieve each target goal | 4.56 | 1.23 |
| 7 | Your friends help you to have better practice | 4.60 | 1.50 |
| 8 | You accepted the grade for this course | 4.55 | 1.75 |
| 9 | Acceptance of the benefit of goal-setting | 4.80 | 1.36 |
| 10 | If possible, you would like to learn by target goal setting in the other courses | 5.00 | 0.00 |
| 11 | Rating the overall teaching program | 4.62 | 1.56 |
| Total | | 4.47 | 1.53 |

Conclusion

Both table tennis programs could improve more table tennis skills after teaching and learning at a .05 level of significance

The table tennis skills by teaching and learning through a teaching program which added goal achievement could improve higher than teaching and learning through the traditional table tennis program at a .05 level of significance.

The program was evaluated by the students at a high level.

The teaching program by adding goal achievement had efficiency and effectiveness. It could apply to table tennis classes in secondary school students.

Discussions

The success of students in enhancing skills in table tennis was the fundamentals basics in terms of movements and skills needed to be strong and consistent. Without such strong fundamentals, you will not be able to improve with more advanced techniques. There are tons of resources out there that will help provide ideal exercises to hone your skills. Start with learning and building on a basic shot, learning to consistently rally with both forehand and backhand and on both sides of your table. In this teaching program besides the target goal-setting techniques, the researcher focuses on basic movement by adding SAQ training to enhance the movement, and reaction time of the students, using multi balls to practice, and buddy teaching method to help them practice more on the stroke repetition by rallying. Improving table tennis skills won't happen all at once, it will take time. It was important to have patience throughout your training but also important that you remember to enjoy yourself while playing table tennis. For the experiment group subjects, if they did not meet the target goals, they will be assigned additional practice in off-class time, so they could improve their skills.

The success of target goal setting which showed on the experiment group test score could confirm the benefit of goal setting technique in "Goal setting is a learning and development technique, it is a systematic process to enhance skills, knowledge, and competency, resulting in better performance in a work setting. Applying the achieved goal-setting program of teaching in table tennis class might be an advantage to the success of student learning because it can be the way of motivation to learn, tailor-made learning styles for the student, and response to the different of students. (indeed.com, 2023)."

Goal setting was important if you wanted greater direction and focus. If you want to grow personally and professionally, it's important to set goals you want to achieve. Goal setting can transform feelings of uncertainty into certainty by providing direction and a clear track to follow. Setting goals helps you create a long-term vision and set short-term measurable goals that provide monthly, weekly,



and daily direction. When you have a clear direction to follow, you feel clear, more capable, and confident. Goals help one prioritize his most important activities, helping you be more productive and effective with your time. Read my guide on the importance of goals for weekly planning. Goals ensure that you align your priorities with your long-term goals. Setting goals gives you a specific, measurable destination to work towards, which ensures you prioritize your tasks and your time each day. Having goals ensures the only activities on your daily schedule are the ones that move you closer to your goals. Goals help reduce stress, and overwhelm and give you more time back to create bigger and better results. (Mark Pettit (2021).

Goal setting provides daily motivation to reach your goals. Without an exciting destination to reach, it's easy to stop working towards a goal when the going gets tough. Motivation is what drives you toward achieving your goal and what keeps you going. Goals give you a clear picture of how your life will improve when you reach your goal. Having this clarity gives you a direction to focus on and ensures you stay motivated. It's essential to choose aspirational, measurable goals that ensure you stay motivated to achieve them each day. If you want to increase your motivation, read my guide on how to stay motivated.

Goal setting improves productivity as you focus more on high-value activities that help you reach your goals. Increased productivity narrows your focus to the activities that will move you closer to achieving your goals and eliminates everything else. This narrow focus on your goals helps you manage your time better, eliminates distractions, and ensures you prioritize effectively. In the first round of target goals, subjects were not sure to meet the target so most of them set the goal at a moderate or low level because they were not sure the teaching program could help them to meet goals, but after evaluating some success and some below so they could learn their ability and adjust more in high and very high level, and they could achieve even some were low but still in the same target level, So the teachers should explain to them how to set the better target by considering 1) Commitment 2) Challenging of goal 3) Task complexity, this research could confirm the founding that the effect of goal setting difficulty on serving success in table tennis, and determine if self-regulation was the mediating variable. After the intervention, athletes' serve success in the experimental group was significantly better than that of the control group. In the experiment group after the intervention, differences in self-regulation and serve success between the experimental and control groups were significant. Moderately difficult goal setting contributed to athletic performance (Liu, et al, 2012).

Purashwan (2018) "Impact of Motivation on the Table Tennis Performance of Male Physical Education Students". This study was conducted to find out the impact of motivation on the table tennis performance of male physical education students learning table tennis in the activity classes. Motivational techniques used were an extrinsic reward, social reinforcement by the coach, goal setting, and competition. it also showed that the post-test scores of the experimental group and control group differ significantly

The various aspects of goal setting of youth tennis players and their coaches indicated that improving overall performance, fun/enjoyment, and winning were the three most important goals for youth tennis players and that they preferred setting moderately difficult goals. The most effective types of goals for players were physical conditioning, practice, and skill/technique, whereas the top reasons for setting goals were focusing attention, problem-solving, and increasing effort. Results also revealed numerous significant differences between coaches' and players' goal setting. The coaches generally have a higher frequency of using different goal-setting strategies and finding them more effective. (Weinberg, et al, 1992)

Goals are ubiquitous in sports. Athletes, teams, and coaches frequently set goals to motivate themselves and improve their performance (Kingston & Wilson, 2009; Weinberg, 1994). There were various kinds of goals in sports, which could be pursued over the short and long term. In high-level sports, goal attainment could be directly related to an athlete's career success or failure. In sports, goal setting has been the most frequently used mental technique (Burton & Weiss, 2008; Kylo & Landers, 1995). However, despite the prevalence of goal setting as a performance enhancement tool, there remains equivocal evidence about how coaches, athletes, and practitioners viewed and employed this technique (Burton, et al, 2013; Maitland & Gervis, 2010). Goal Setting Techniques in sport and performance were more complicated. In the applied sports settings, examine the extent to which the



intervention studies apply relevant theoretical components. Goal Setting Technique pertains to the moderators that influence the relationship between goal setting and performance, which include ability, goal commitment, feedback, task complexity, and task knowledge and resources (Locke and Latham, 1990, 2002, 2007, 2013)

The lack of goal-setting could hurt the performance of managers in several ways, including 1) Lack of clarity and direction 2) Ineffective performance monitoring 3) Reduced accountability 4) Misalignment 5) Decreased engagement and motivation

The success of target goal setting which was shown in the experiment group could confirm the benefit of the goal setting technique “Goal setting is a learning and development technique, it is a systematic process to enhance skills, knowledge, and competency, resulting in better performance in a work setting. Applying the achieved goal-setting program of teaching in table tennis class might be an advantage to the success of student learning because it can be the ways of motivation to learn, tailor-made learning styles for the student, and response to the differentiate of students. (indeed.com, 2023).” The application of goal setting in sports class is very important but teachers have to consider the: 1) the moderate level of goal setting was advantageous (Weinberg, et al, 19922) The target goal should follow the Principle of SMART. 3) The key principles for goal achievement were Commitment, Clarity of target goal setting, Challenge of goal, Feedback, and task complexity (Locke & Latham, 1990). 4) Avoid negative thinking (Finkle 2020).

Conclusion

The goal setting was very useful for athletes and students who trained and learned sports. It was a motivation, direction, and feedback for them to adjust their practice and learning. The moderate level of target goal was reasonable and practical to achieve. In the first phase of training or learning, the teacher or coach should advise them to set a moderate level of target goal. The results of this research confirmed the benefit of goal achievement like the other previous research, so it was advantageous to apply it to teaching and learning programs for students, and training programs for athletes.

Recommendations

Application of research result

1. The school teachers should apply target goal setting to a class of physical education and exercise to motivate them to achieve the course learning outcome
2. The target goal setting could apply to the other course of teaching and learning.

Application for the next study

1. The next research should apply the effect of target goal level as the independent variable in experimental design because it could obtain deep results by comparing different methods of training.
2. Try adding bonus scores for the students who achieved target goals for better motivation



References

- Aksović, N., Bjelica, B., Jovanović, L., Zelenović, M., Milanović, L. (2023). Didactic-methodological principles in physical education teaching. *J. Sports Reh. Po.*, 10 (24), 2422 – 2435
- Burton, D., & Weiss, C. (2008). The fundamental goal concept: the path to process and performance success. In T. S. Horn (Ed.), *Advances in sport psychology* (3rd ed., pp. Human Kinetics.
- Burton, D., Gillham, A., Weinberg, R., Yukelson, D., & Weigand, D. (2013). Goal setting styles: Examining the role of personality factors on the goal practices of prospective Olympic athletes. *Journal of Sport Behavior*, 36(1), 23–44.
- Chang, Y. K., et al. (2019). Effects of resistance training on health-related fitness and cross-domain cognitive function in older adults: A randomized controlled trial. *International Journal of Environmental Research and Public Health*, 16(2), 233.
- Chow, J. Y., et al. (2018). Promoting motor skill learning through practice schedule consistency in children. *Journal of Sports Sciences*, 36(14), 1557-1563.
- Finkle, L. (2020). Strategies to Stop Negative Thinking and Start Goal Setting. Retrieved on 15 December 2023 from: <https://www.linkedin.com/pulse/strategies-stop-negative-thinking-start-goal-setting-linda-finkle/>
- Guo, D. (2018). Effects of different teaching methods on students' table tennis serve skills. *International Journal of Environmental Research and Public Health*, 15(11), 2492.
- Hodges, N. J., & Bunker, D. (2019). *Skill acquisition in sport: Research, theory, and practice*. Routledge.
- indeed.com. (2023). 10 Educational Goal Examples. Retrieved on 25 October 2023 from: <https://www.indeed.com/career-advice/career-development/educational-goals->
- indeed.com. (2023). Learning Goals vs. Performance Goals: Differences and Advantages. Retrieved on 25 October 2023 from: <https://www.indeed.com/career-advice/career-development/learning-goals-vs-performance-goals>
- Kingston, K.M., & Wilson, K.M. (2009). The application of goal setting in sport. In S. Mellalieu & S. Hanton (Eds.) *Advances in Applied Sport Psychology: A Review* (pp. 75–123). Routledge.
- Kwok, H. H., & Yang, J. (2020). Effects of video-based coaching on table tennis forehand topspin development. *Frontiers in Psychology*, 11, 572957.
- Kyllo, L.B., & Landers, D.M. (1995). Goal setting in sport and exercise: A research synthesis to resolve the controversy. *Journal of Sport & Exercise Psychology*, 17(2), 117–137.
- Latham, G. P., & Locke, E. A. (2007). New developments in and directions for goal setting. *European Psychologist*, 12, 290–300.
- Li, Y., et al. (2017). Motivation and performance in table tennis players: A cross-lagged panel analysis. *Frontiers in Psychology*, 8, 1645.
- Liu, W., Zhou, C., Ji, L., Watson, J.C. (2012) 2nd. The Effect of Goal Setting Difficulty on Serving Success in Table Tennis and the Mediating Mechanism of Self-regulation. *J Hum Kinet.* 33, 73-85. doi: 10.2478/v10078-012-0056-y.
- Locke, E. A., & Latham, G. P. (2002). Building a practically useful theory of goal setting and task motivation: A 35-year odyssey. *American Psychologist*, 57(9), 705–717. <https://doi.org/10.1037/0003-066X.57.9.705>
- Locke, E.A., & Latham, G.P. (1990). *A theory of goal setting & task performance*. Englewood Cliffs, NJ: Prentice-Hall.
- Locke, E.A., & Latham, G.P. (2013). *New developments in goal setting and task performance*. New York, NY: Routledge.
- Maitland, A., & Gervis, M. (2010). Goal-setting in youth football. Are coaches missing an opportunity? *Physical Education and Sport Pedagogy*, 15, 323–343. <https://doi.org/10.1080/17408980903413461>
- Mark Pettit (2021). *9 Reasons Why Goal Setting is Important*. Lucemi Consulting. Retrieved on 30 October 2023 from: <https://lucemiconsulting.co.uk/importance-of-goal-setting/>
- National Association for Sport and Physical Education (NASPE). (2003). *National standards for beginning physical education teachers*. 2nd edition, Reston, VA:



- Purashwan, P. (2018). Impact of Motivation on the Table Tennis Performance of Male Physical Education Students. *International Journal of Physical Education & Sports Sciences*. 13 (3), 38-40. DOI: 10.29070/IJOPESS
- Song, Y., & Tang, M. (2021). A review of effective teaching methods in table tennis teaching. *Sports Education and Science*, 36(3), 84-87.
- Speakeragency.co.uk, Blog. (2023). *Next Generation Learning and Teaching Methods in Education*. Retrieved on 25 October 2023 from: <https://www.speakeragency.co.uk/blog/next-generation-learning-and-teaching-methods-in-education>.
- Vietnamteachingjobs.com (2023). *14 Types of teaching methods for an effective lesson*. Retrieved on 1st January 2023 from: <https://vietnamteachingjobs.com/types-of-teaching-methods/>,
- Wang, X., et al. (2020). Effects of aerobic training on sports performance: A systematic review and meta-analysis of randomized controlled trials. *Frontiers in Physiology*, 11, 598310.
- Weinberg, R. (1994). Goal setting and performance in sport and exercise settings: A synthesis and critique. *Medicine and Science in Sports and Exercise*, 26, 469-477.
- Weinberg, R., Grove, R., & Jackson, A. (1992). Strategies for Building Self-Efficacy in Tennis Players: A Comparative Analysis of Australian and American Coaches. *The Sport Psychologist*. 6 (1), 3-13. 10.1123/tsp.6.1.3.
- Zhang, L., et al. (2021). Game-based learning in physical education: A systematic review. *Frontiers in Psychology*, 12, 648742.