

# Factors of table tennis teams' organizing and training at the primary schools in Kaohsiung City

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**Abstract:** The purpose was mainly to understand table tennis organizing and training as well as its factors in Kaohsiung primary schools with table tennis teams. This study also tried to explore whether teachers' different backgrounds might influence their viewpoints on the issue of table tennis organizing and training factors. A self-designed questionnaire ("Implementation factors in table tennis training programs in Kaohsiung City primary schools") was used and primary school teachers were the subjects. Results were as follows:

1. The primary schools with table tennis teams were 29.55% of the total primary schools in Kaohsiung City.
2. Administration support, table tennis professional teachers and coaches' exertion and well-built training place and equipment concluded the continuity of the teams.
3. Financial shortage was an obstacle factor to the table tennis teams in Kaohsiung.
4. Professional coaches, substantial budget, and parental support were required as the teams in Kaohsiung are founded.
5. Factors were followed in order: parental agreement, training places and facilities, professional coaches, administration support, curriculum assistance of team players, and financial resources.
6. No significant differences existed in terms of gender, coach qualification, teachers' profession background, school size, years of experience, and position at the schools.

**Key words:** table tennis, sport team, organizing and training

## 1. INTRODUCTION

Physical education (PE) in school is the foundation of a nation's basic development of sport; therefore, it will directly affect the social expansion and the nation's development of the exercise [11]. Sports teams can not only cultivate the exercise interest of students and multiply sporting population, but also participate in games to help gain the reputation of their school. Furthermore, they can train more excellent athletes to fight for the honor of their country [9]. To promote the organizing and training of the school sports teams can not only match up the sports policy to enhance the national development, but guide the people involved in national exercise to increase competitiveness of its country.

Although there are many kinds of sport today, schools still have difficulties forming sports teams, with the limitation of parental agreement and financial resource, the lack of professional coach, administration and tutor's support, and the deficiency of the students [12, 6]. Therefore, it is important that schools should plan to develop appropriate sports with the equipment on hand. Mood et al. [5] indicated that table tennis is an exercise everyone can do because it, contrary to other exercise, needs the least equipment and costs less. And everyone at any age can do it at any place. Moreover, because its bat weights less, it is less possible that one gets hurt while playing table tennis. Huang [2] pointed out that table tennis is a recreational sport that should be promoted, mainly due to several factors as follow: without the limitation of body figure and weather condition; easy to prepare the equipment and to

understand the rule; less possible to get injured; the expense is little; the amount of exercise can be controlled; one's life span is longer while taking exercise. To sum up, there may advantages to advocate table tennis in a primary school which is with limited resources. Maybe the obstacles of organizing and training teams can be reduced while the school puts emphasis on table tennis as the dominant sports.

Kaohsiung city has been one of the most important cities in developing table tennis exercise. From 1980s, schools begin to promote table tennis and cultivate excellent athletes, founding many table tennis centered schools and classes [8]. At that time, the primary schools in Kaohsiung city entered a golden age, creating many national players of table tennis, Chuang Chi-yan was one of the most significant ones. However, the number of table tennis centered schools was on the decrease recently, from 16 in 1989 to 4 in 2007 [7] which points out the difficulty of organizing and training a sports team in current situation, resulting in the shortage of high school table tennis players. Therefore, how to make sure that table tennis course can indeed be implemented in primary schools and make it a sustainability to achieve the goal of advocating it thoroughly and nationally is an issue of great urgency. Besides, PE in schools is the basis of national sport. If it is possible to attract more school children to play table tennis by organizing and training representative team of this sport and make it a regulation of exercising, this will have a great benefit on children development — physically and mentally. Whether a team is best or not depends mostly on its coach. Usually the coaches come

from the PE teachers in school. However, some come from other teachers. As often seen in primary school, teachers and deans hold a concurrent spot of the coach [12]. And because of this reason, school teachers play an important role in organizing and training sports team. Thus, if wanting to organize and train an elementary school team of table tennis, one should know the factors concerned, the obstacles lying ahead, and the help needed during the process to understand the viewpoint of primary school teachers with different backgrounds in Kaohsiung toward organizing and training table tennis sports team, know the causes of differences in between, and regard those as the basic consideration of organizing and training.

All in all, the purpose of this study was to discuss the current situation of the organizing and training of table tennis team at the primary schools in Kaohsiung City and compare these analyses to understand the factors and hope that Kaohsiung City Government could view it as the reference of promoting table tennis exercise.

## 2. PURPOSE

- (1) To understand the current situation of table tennis organizing and training in Kaohsiung primary schools.
- (2) To understand the consideration factors of teachers in Kaohsiung primary schools while organizing and training table tennis teams.
- (3) To analyze whether teachers' different backgrounds might influence their viewpoints on the issue of table tennis organizing and training factors

## 3. METHOD

### 3.1 Sample

The subjects were teachers who were responsible for coaching table tennis team and were actually taking part in teaching PE class in 2008, such as the principal, deans, coaches of table tennis team, homeroom teachers, PE teachers, and teachers majoring in table tennis. 440 teachers were spot-checked, including five teachers in each school, 88 schools in total.

### 3.2 Method

A self-designed questionnaire "Implementation factors in table tennis training program in Kaohsiung City primary schools" was adopted. It consisted of three main parts: the first part was the basic information of the testees. The second part was the current situation of table tennis teams in primary schools in Kaohsiung City. The third part was teachers' opinion on the implementation factors in table tennis training program. By using item analysis and reliability-validity analysis, this study was designed with the adoption of 5-point Likert scale.

Documents of domestic and foreign school table tennis teams were collected and referred to the implementation factors of Chen [1], Kuo [3] and Lin [4], adopting seven aspects: "administration support," "financial resource," "professional coaches," training

places and facilities," "team players," "parental agreement," and "curriculum assistance of team players."

1. Item analysis: according to Wu and Du [10] this item uses extreme groups and test of homogeneity to find the critical value and correlation coefficient as the standard. The result showed that each critical value of the questions was less than 0.05 ( $p < 0.05$ ), and the total score was up to 0.30, so every item was kept.

2. Construct validity: uses "principal components analysis" to get the eigen value. Varimax rotation was used to find the orthogonal rotation, one that was greater than 0.30 was selected. During the first factor analysis, there were 7 factors of which eigen value was greater than 1. The seventh factors did not contain any item, so was deleted. Besides, if the factor loading was less than 0.30, the item was also deleted.

### 3.3 Data processing

(1) Used the descriptive statistics to study the current situation of table tennis team at the primary schools in Kaohsiung City and to study the implementation factors of it to find out the average score.

(2) Analyzed and compared the differences between teachers with different background, including gender, team coach, professional background, school scale, working position, and years of serving, by one-way MANOVA.

## 4. RESULTS AND DISCUSSION

29 items were kept. In order to understand these 29 items stability, the second factor analysis was conducted. This time the same method as the first one was adopted with the specific six factors. The result fell into the expected dimension. And the cumulative variance was 66.43%, these items were named "parental support" (37.25%, 8 items), "curriculum assistance of team players" (7.36%, 8 items), "administration support" (6.64%, 4 items), "training place and facilities" (5.72%, 3 items), "professional coaches" (5.21%, 3 items), and "financial resources" (4.25%, 3 items) accordingly.

Reliability analysis: Cronbach  $\alpha$  value of the implementation factors of table tennis team in primary school were 0.93, and each item value was as follow: parental factor for 0.88, curriculum assistance of team players for 0.83, administration support for 0.77, training place and facilities for 0.82, professional coaches for 0.81, and financial resources for 0.76.

### 4.1 Current situation of training and organizing of table tennis teams at the primary schools in Kaohsiung City

(1) Reasons of organizing and training table tennis teams in primary schools in Kaohsiung City.

There were 88 primary schools in Kaohsiung city and 26 of them (29.55 %) had table tennis teams in school. This question was a multiple choice with one more response. The targets were teachers who were actually involved in coaching table tennis team and sport-related business; 119 valid samples were collected (table 1).

Table 1 Main reasons of keeping table tennis team in school

Topic item	Choices	N	%
Main reasons of keeping table tennis team in school	-administration support	97	81.5
	-efforts of teachers and coaches	96	80.7
	-complete training place and facilities	89	74.8

(2) Obstacles for organizing and training table tennis team in primary school.

This question was a multiple choice with one more response. The targets were teachers who were actually involved in coaching table tennis team and sport-related business; 119 valid samples were collected (table 2). It appears that lack of financial resource was the biggest obstacle for implementation of table tennis team in school.

Table 2 Obstacles for organizing and training table tennis team in primary school

Topic item	Choices	N	%
Obstacles for organizing and training table tennis team in primary school	-lack of financial resource	71	59.7
	-lack of parental support	29	24.4
	-lack of professional coaches	27	22.7
	-academic digression of players	25	21.0
	-lack of training place and facilities	7	5.9
	-lack of administration support	5	4.2
	-others	19	16.0

(3) Teachers assistance needed in organizing and training table tennis team at the primary schools.

This question was a multiple choice with one more response. The targets were teachers who were actually involved in coaching table tennis team and sport-related business; 399 valid samples were collected (table 3).

Table 3 Assurances needed in organizing and training table tennis team

Topic item	Choices	N	%
assurances I need in organizing and training table tennis team in my school	-professional coaches	286	71.7
	-sufficient financial support	275	68.9
	-parental agreement	262	65.7
	-complete training place and facilities	242	60.7
	-administration support	188	47.1
	-curriculum assistance of players	120	30.1
	-others	15	3.8

(4) Conclusion

The main reason for keeping table tennis teams in schools were: first, the support of administration, and

second, the effort of professional teachers and coaches. The most common obstacle was “lack of financial support,” of which the proportion was up to 60% in all samples. The assistance needed the most was “professional coaches,” of which the proportion was up to 70%.

#### 4.2 Implementation factors in table tennis training programs in Kaohsiung city primary schools

From table 4, one could understand that the value of the overall consideration of teachers’ opinion on implementation factors was 4.37. In the six factors mentioned before, “parental support” was the highest score. Other factors were “training place and facilities”, “professional coaches”, “administration support”, “curriculum assistance of players”, “financial resource”. The averages were all up to 4 so all of factors could be regarded as the obstacles faced while organizing and training a table tennis team.

Table 4 Implementation factors in training programs

Variation	N	M	SD	Ranking
-parental support	399	4.54	.47	1
-curriculum assistance of players	399	4.27	.53	5
-administration support	399	4.38	.55	4
-training place and facilities	399	4.50	.55	2
-professional coaches	399	4.41	.57	3
-financial resources	399	4.16	.63	6
-overall consideration	399	4.37	.43	

#### 4.3 Comparison between different background teachers

According to overall consideration, parental support, training place and facilities, professional coaches, administration support, curriculum assistance of players, and financial resources were analyzed to see whether teachers’ gender would cause any difference by using one-way MANOVA (table 5). There was no significant difference between consideration factors of organizing and training table tennis teams and the gender of teachers (Wilk  $\lambda = 0.989$ ,  $p = 0.60$ ), and it also showed that the six factors were the main obstacles with which these teachers were faced in common—both male and female, so their viewpoints were almost the same.

Table 5 Viewpoint of different gender of teachers toward the implementation of table tennis team

Factors	Gender	N	M	SD
Parental support	M	270	4.52	.48
	F	129	4.58	.43
Training place and facilities	M	270	4.47	.56
	F	129	4.55	.54
Professional coaches	M	270	4.40	.59
	F	129	4.43	.52
Administration	M	270	4.36	.56

support	F	129	4.41	.54
Curriculum assistance of team players	M	270	4.27	.54
	F	129	4.27	.53
Financial resources	M	270	4.16	.63
	F	129	4.15	.62
Overall consideration	M	270	4.36	.45
	F	129	4.39	.40

Wilk  $\lambda = 0.989$

### (2) Professional sport background of teachers

According to overall consideration, parental support, training place and facilities, professional coaches, administration support, curriculum assistance of players, and financial resources were analyzed to see whether teachers' professional sport background would cause any difference by using one-way MANOVA (table 6).

There was no significant difference between consideration factors of organizing and training table-tennis teams and the professional background of teachers (Wilk  $\lambda = 0.983$ ,  $p = 0.33$ ). Besides, the research of Chen [1] also showed that there was no difference between coaches who were graduated from sports-related or non-sports-related department on training and organizing of school team in Tainan County. The reason might be that the six factors were the main obstacles they encounter in reality, so their viewpoints were almost the same, regardless of the professional background of coaches.

Table 6 Viewpoints of whether coaches should have professional background

Factors	Professional background	N	M	SD
-Parental support	Y	137	4.61	.41
	N	262	4.51	.49
-Training place and facilities	Y	137	4.53	.50
	N	262	4.49	.57
-Professional coaches	Y	137	4.43	.57
	N	262	4.40	.58
-administration support	Y	137	4.42	.51
	N	262	4.36	.58
-Curriculum assistance of players	Y	137	4.28	.48
	N	262	4.26	.56
-Financial resources	Y	137	4.14	.57
	N	262	4.17	.65
-Overall consideration	Y	137	4.40	.36
	N	262	4.36	.46

Wilk  $\lambda = 0.983$

### (3) Coaching experience

Parental support, training place and facilities, professional coaches, administration support, curriculum assistance of players, and financial resources were analyzed to see whether teachers' coaching experience would cause any difference by using

one-way MANOVA (table 7).

There was no significant difference between coaching experience and consideration factors of organizing and training table tennis teams (Wilk  $\lambda = 0.962$ ,  $p = 0.65$ ). Besides, on the overall consideration, the result of this study was the same as the one of Chen [1] who also showed that there was no difference between coaches' years of serving on training and organizing of school team in Tainan County. In addition, Kuo [3] also indicated that there was no significant difference between the years of serving of teachers leading football team in junior high schools in Taipei City.

Table 7 Viewpoints on different coaching experiences

Factors	Experience	N	M	SD
-Parental support	-Less than 5 years	70	4.54	.45
	-6-15 years	174	4.54	.43
	-16-25 years	118	4.51	.55
	-More than 26 years	37	4.65	.36
-Training place and facilities	-Less than 5 years	70	4.56	.54
	-6-15 years	174	4.51	.51
	-16-25 years	118	4.43	.62
	-More than 26 years	37	4.58	.45
-Professional coaches	-Less than 5 years	70	4.34	.58
	-6-15 years	174	4.45	.53
	-16-25 years	118	4.35	.65
	-More than 26 years	37	4.53	.45
-Administration support	-Less than 5 years	70	4.41	.56
	-6-15 years	174	4.38	.54
	-16-25 years	118	4.33	.60
	-More than 26 years	37	4.46	.46
Curriculum assistance of players	Less than 5 years	70	4.27	.50
	6-15 years	174	4.29	.50
	16-25 years	118	4.20	.60
	More than 26 years	37	4.39	.47
-Financial resources	Less than 5 years	70	4.08	.57
	6-15 years	174	4.20	.60
	16-25 years	118	4.11	.71
	More than 26 years	37	4.27	.53
-Overall consideration	Less than 5 years	70	4.36	.36
	6-15 years	174	4.39	.40
	16-25 years	118	4.32	.52
	More than 26 years	37	4.48	.34

Wilk  $\lambda = 0.962$

## 5. CONCLUSIONS AND RECOMMENDATIONS

### 5.1 Conclusions

(1) The current situation of the table tennis teams in Kaohsiung City:

a. On the 26 primary schools having a table tennis team, 14 of them could be ranked as large schools (more than 49 classes), 7 of them were middle schools (25-48 classes) and 5 of them were small ones (less than 24 classes).

b. The main reasons of forming a table tennis team in a primary school were administration support and the effort of teachers and coaches, ranking first and second respectively.

c. The obstacle of implementation of training and organizing table tennis team was lack of financial

resources.

d. There were only 34 coaches in those 26 schools, accounting for 8.5% of all samples. As a result, there was a severe shortage of professional coaches in primary schools in Kaohsiung City.

(2) The implementation factors in table tennis training programs:

The factors were parental support, training place and facilities, professional coaches, administration support, curriculum assistance of players, and financial resources in order.

(3) Teachers' background as the implementation factors in table tennis. Teachers thought that:

a. There was no significant difference between consideration on factors of organizing and training table tennis teams and the gender of teachers. Therefore, no differences were shown while teachers consider the implementation factors of organizing and training a table tennis team.

b. There was no significant difference whether teachers could serve as the table tennis coaches or not. Therefore, no differences were shown while teachers consider the implementation factors of organizing and training a table tennis team.

c. There was no significant difference between consideration factors of organizing and training table tennis teams and their professional background and factors while they coach a team. Therefore, no differences were shown while teachers consider the implementation factors of organizing and training a table tennis team.

d. There was no significant difference whether their school forms a table tennis team or not. Therefore, no differences were shown while teachers consider the implementation factors of organizing and training a table tennis team.

e. There was no significant difference while considering the scale of school, different working position, and years of serving as the implementation factors. Judging from this, teachers think it will make no difference while they think overall consideration, parental support, training place and facilities, professional coaches, administration support, curriculum assistance of players, and financial resources as the implementation factors.

## 5.2 Recommendations

(1) Recommendations to educational organization:

a. Revise the test system to select a primary school PE teacher:

There was a severe shortage of table tennis major teachers and coaches. So far, anyone who had the qualification of the primary school teacher could join in the test of selecting PE teachers, regardless of their major. Thus, most teachers did not have the professional background of table tennis. As a result, those who major in table tennis lose the opportunity to get this position. So the government should revise the test system, taking teachers' capacity of technical subjects into

consideration and reset the standard for those who major in PE to ensure them the opportunity of entering second part of the examination.

b. Increase the number of professional table tennis coaches:

This study discovered that there were currently only two professional table tennis coaches in Kaohsiung City. However, there were 88 primary schools in this city. Judging from this, professional coaches were in an urgent need. Moreover, teachers were busy in school works, if they also need to take a concurrently position of coaching a team, the quality of it might decrease greatly. By increasing the number of professional table tennis coaches, teachers could focus on their teaching business and professional coaches could also focus on training the players. Therefore, the Minister of Education and Kaohsiung Educational Bureau Government should increase the number of professional coaches of table tennis to improve the predicament of this problem.

c. Increase the funding of primary schools:

The biggest obstacle of current training and organizing table tennis teams was lack of financial resources. With the limited funds, it was very difficult to form a team which needed many expenses. The basic way to enhance competitiveness was education, therefore increasing countries budget on educational policies. The government should value the PE class in primary school, because the golden period of school was the primary stage for children's development. Therefore, if the government could increase funds in primary school, it would have great influences on the expansion of training and organizing of school teams.

(2) Recommendation to table tennis teams in primary schools in Kaohsiung City:

a. Integrate the administration support:

The main reason of keeping table tennis team in school was the support of administration. Judging from this point of view, gaining the administration support had a great influence and played an important role on training and organizing a school team. Thus, the principal and deans should integrate the administration support and set up an appropriate rule for forming a team, providing assistance initiatively to decrease the stress of coaches and increase the willingness to keep school teams.

b. Seek for social resources:

With the limited resources, primary schools should seek for other social supports as their first priority. Social resources were hereby divided into "funds" and "human resource" aspect, and were illustrated as follow:

(a) The funds:

Beside budgeting regular annual funds of training and organizing teams, schools should find other ways to cut expenditure, such as renting the school table tennis training place for a summer camp or clubs, etc. in order to increase the table tennis teams' funding for training. Moreover, schools could cooperate with parents to actively set up table tennis team support groups and fight for the approval of Parent Advisory Councils,

entrepreneurs, factories and stores near school to get more funding for teams to improve the problem of funding sources.

(b) Human resource:

Teachers in primary school often hold a concurrent spot of the coach and teacher that made their works even more painstaking. In addition, schools could encourage the retired teachers who had professional table tennis skills, even thought parents or other local people to participate in training table tennis team. In addition, school could look for assistance of college students who major in physical education, and encourage them to participate in the training of school teams in a way of community service. By this method, schools could not only solve the problem of seeking professional coaches, but also provide college students a practical teaching experience.

c. Focus on cultivating students' interest in exercise:

When organizing and training a team, the emphasis should be placed on cultivating players' interest in sport and helping them keep a good habit of exercise. Blindly pursuing the performance of the athletic achievement will only make players feel fatigued and lose the motive of participation.

d. Curriculum assistance for players:

Academic digression was the main reason parents disapprove students taking part in school teams, and the players drop off in the middle of training. In addition to this drawback, there are also many adversities while student entering high school and society due to this digression. Therefore, schools should have curriculum assistance for players in order to help them willing to keep the long-term training. Schools should assist students both on academic and sports area, helping them to be master of both the pen and the sword.

e. Gain parental support:

Parental support ranks as the first priority while teachers organize and train a team in primary school. Students are not fully mature during this primary stage so the parents' decisions have a great influence on the students. Therefore, gaining parental support becomes an important work while training a team. Schools and coaches should, through good planning, establish communication channels, so that parents have a thorough understanding of training in order to get the parental agreement. Besides, parents can provide the table tennis team recommendations for improvement through this channel. Moreover, schools can also set up support groups or invite parents to assist coaches and athletes.

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