

# How A Team Games Tournament Method Improves Injury Handling Behavior among Those who Participate in Extracurricular Sports

Erna Dwi Wahyuni\*, Regina Dwi Fridayanti, Lailatun Ni'mah

**Abstract**--- Individuals who participate in extracurricular sport (hereafter sports extracurricular members) are required to handle injuries. But, members' knowledge of ways to handle injury is still lacking. This study aimed to analyze the effectiveness of health education using a Team Games Tournament (TGT) method to enhance extracurricular members' behavior in terms of handling injuries. This study used a quasi-experimental pretest-posttest design. A simple random sampling technique was chosen to recruit respondents according to the inclusion criteria. There were 64 sports extracurricular members at Junior High School level involved in the study. The dependent variables were injury handling behavior, consisting of knowledge, attitude, and practice; the independent variable of this study was the TGT method. This study used a questionnaire related to injury knowledge, attitude towards treating injury, and injury treatment. Data were analyzed using the Wilcoxon Signed Rank and Mann-Whitney test with a significance level of  $p < 0.05$ . The research results indicate that the TGT method against increased knowledge ( $p = 0.000$ ), attitude ( $p = 0.000$ ) and action ( $p = 0.000$ ) in the treatment group. There was a significant difference between the treatment group and the control group in terms of knowledge ( $p = 0.000$ ), attitude ( $p = 0.000$ ) and action ( $p = 0.000$ ). This study showed that using TGT in health education is effective in changing sports extracurricular members' behavior in terms of treating injuries.

**Keywords**--- Team Games Tournament, Sports Extracurricular Members, Sports Injuries

## I. INTRODUCTION

Extracurricular activities are activities that are conducted outside school hours in an effort to guide students in coaching their interests and talents [1]. One extracurricular activity is sports. Sports extracurricular activities have a high risk of sports injuries. Injury can be internal, external, and also caused by doing sports activities continuously without any rest. Sports injuries, both mild and severe, require treatment that is appropriate and fast because if there is incorrect treatment given, it will harm students [2]. Types of sports that can cause injuries include, among others, futsal, basketball, and volleyball [1].

Actions taken to treat injuries to sports extracurricular members are not by the principles of injury management. Handling of injuries done during training only involves stretching of the body if the injury is minor, whereas if a serious injury is experienced, students will be taken to the nearest health center [1]. Training and education about handling sports injuries has never been given and this can affect the knowledge, attitudes, and actions of sports extracurricular members about how to handle injuries in the first instance.

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Faculty of Nursing, Universitas Airlangga, Surabaya Indonesia

Corresponding author:  
Erna Dwi Wahyuni  
Email: [erna-d-w@fkip.unair.ac.id](mailto:erna-d-w@fkip.unair.ac.id)

The results of [1] show that 68.46% of minor sports injuries generally occur in the neck, shoulders, elbows, and wrists and the location of the most frequent injury is the upper body at 55.66%. Injuries reported in male youth soccer players most commonly occur in the lower extremities, and include a high proportion of ligament sprains at the ankle and knee with a lower proportion of overuse injuries [3]. The results of one study [4] showed that the most frequent sports injuries were from football (31.13%) followed by handball (8.89%) and sports during school (8.77%). The lower extremities were involved in 68.71% of the cases. The injuries that often occur during sports activities were 31.13% injured, injured knee (29.79%), and distorted (35.34%).

A preliminary study conducted by interview method from February 23 to March 12, 2019, with 8 extracurricular members of State Junior High Schools in Sedati obtained results about any injuries ever experienced by extracurricular members including bruising injuries (25%), sprain injuries (30%), muscle cramps (35%), and injuries to the hand or shoulder (10%). Most of them said that if they did an improper treatment such as giving balm to the injured area, massaging or massaging the injured area and leave it alone. Sports extracurricular members from the two schools said there had never been any education given about injuries and how to handle injuries, either from schools or public health centers.

Extracurricular activities have a risk of injury. Extracurricular members unwittingly forget the importance of safety in carrying out extracurricular activities [5]. Some factors causing injury are: (1) external factors including environmental conditions, sports equipment, sports body contact; 2) internal factors including body posture (malalignment), overload, physical condition, wrong movement coordination, and lack of warm-up [6], muscle imbalance, fatigue [6], [7], and (3) overuse [6]. The level of injury incidents suffered by extracurricular members is very high, so extracurricular members need to know how to first handle if there is an injury at the time of death or during a race. Lack of knowledge, attitudes, and actions regarding injuries and how to deal with injuries will cause new problems for extracurricular members. The problem that can arise if the handling of injuries is not good and right is that it can result in physical limitations and prolonged pain at the location of the injury [8]. Information from the results of interviews with futsal extracurricular members demonstrated that parts of the body that had been injured sometimes hurt without cause when doing activities or while doing exercises.

Research conducted by [9] revealed that the Team Games Tournament (TGT) method can improve learning outcomes reaching 77.42% in Palembang State Junior High School among students in mathematics. Research by [10] revealed that students' knowledge was increased by the TGT method compared to the lecture method, an increase of 2.93%. The TGT method is recommended as an education method that is more suitable for targeting school-age children. Learning methods with elements of the game can make students more relaxed and and the learning more fun.

The selection of learning models is very important so that students can learn well [11]. Cooperative learning can make learning effective because in the learning process students learn and interact with peers and their teachers [11], [12]. Among the various types of cooperative learning methods, the method that will be used in this research is the TGT. The TGT method requires all group members to understand and master the material and the members are always active when the game is going on to add points to the group. The Step TGT method begins with the facilitator delivering the material to be given by direct teaching or by lecturing. Next, there is study in groups to ensure members understand and prepare for working on games. The games phase consists of questions that have been designed to test the knowledge gained during the direct teaching and group learning. The tournament step is a structure where games take place. At the group award stage, group success is determined by the results of points that have been collected during games and tournaments [10]. Up to now, the effect of health education with the TGT method on changes in knowledge and behavior in handling sports injuries has never been studied; therefore, the purpose of this research is to understand the effect of health education through the TGT method on changes in knowledge and behavior in handling sports injuries among sports extracurricular members.

## II. METHODS

This research used a quasi-experiment with pre-post test control group design. The population in this study was made up of members of sports extracurricular activities at Sedati 1 and 2 Junior High School (SMP), Sedati, East Java. The sample met the inclusion criteria, namely they were all extracurricular members who took part in routine training at least once a week. The sample size was 32 sports extracurricular members in each group with a total sample of 64 people. The sampling technique used was probability sampling with a simple random sampling technique. The control group came from Sedati 1 Junior High School, and the treatment group came from Sedati 2 Junior High School.

The independent variable for this research was the TGT method, and the dependent variables were injury handling behavior, consisting of knowledge, attitude, and practice. The instrument used in the study was a knowledge, attitude, and practice questionnaire. The knowledge variable instrument used a questionnaire adopted from [13]; the attitude and practice variable instrument used a questionnaire adopted from [13] and [14]. The research instrument for TGT variables used the unit event activities (SAK). The data based on post-test results was validated by two evaluators. Data were analyzed using the Wilcoxon Signed Rank Test and the Mann Whitney U Test. This research was conducted in June-July 2019, at the Junior High School Sedati, Sidoarjo, East Java.

This research passed the ethical test of the Health Research Ethics Committee of the Faculty of Nursing, Airlangga University, with an ethics certificate No: 1429-KEPK.

## III. RESULTS

Table 1. Statistical Results for Knowledge

	Intervention Group				Control Group			
	Pre-test		Post-test		Pre-test		Post-test	
	n	%	n	%	n	%	n	%
Good	1	3	32	100	0	0	0	0
Enough	5	16	0	0	4	12	0	0
Less	26	81	0	0	28	88	32	100
Total	32	100	32	100	32	100	32	100
Wilcoxon signed-Rank Test	p=0.000				p=1.000			
Mann Whitney U test	Pre-test p=0.478							
	Post-test p=0.000							

Table 1 shows that the treatment group before treatment in the category 'less' had the greatest number for knowledge level at 81% (26 people). After being given an intervention, all respondents experienced an increase in the good category with results at 100% (32 people). The control group during the pre-test was mostly in the poor category at 88% (28 people), while in the post-test there was an increase in the 'poor' knowledge category by 4 (12%).

Statistical test results in the treatment group before and after the TGT method health education had a p-value = 0,000 so that  $p < 0.05$  which means that the TGT method for health education affected the knowledge of sports extracurricular members in terms of handling injuries before and after the intervention. Statistical test results between the treatment group and the control group after being given health education had a p-value = 0,000 so that  $p < 0.05$  which means there were differences in knowledge between the two groups. Homogeneity test results gave a value of 0.406. The value was  $> 0.05$  which means that the pretest data was homogeneous knowledge.

Table 2. Statistical Results for Attitude

Attitude level category	Intervention Group				Control Group			
	Pre-test		Post-test		Pre-test		Post-test	
	n	%	n	%	n	%	n	%
Positive	15	47	20	62	15	47	15	47
Negative	17	53	12	38	17	53	17	53

Total	32	100	32	100	32	100	32	100
Wilcoxon Sign Rank Test			p=0.000				p=0.236	
Mann Whitney U test					pre-test p=1.000			post-test p=0.000

Table 2 shows the distribution for attitude of the treatment group during the pre-test at the greatest number of people in the negative category at 53% (17 people), while during the post-test, the negative attitude category decreased to 38% (12 people). The control group for attitude distribution during the pre-test was mostly in the negative attitude category at 53% (17 people) and during the post-test, the negative attitude category had not changed from the pre-test results. The result for the statistical tests before and after the health education intervention was given through the TGT method in the treatment group had a  $p = 0.000$  so that  $p < 0.05$  which means there was a change in attitude before and after in the treatment group. Statistical test results between the control group and the treatment group after being given health education had a  $p = 0.000$  so that  $p = 0.000$ , which means there were differences in attitudes between the control group and the treatment group. Homogeneity test results obtained pre-test attitudes with a value of 1.000, meaning that the variable homogeneous attitude.

Table 3. Statistical Results for Practice

Practice level category	Kelompok Perlakuan				Kelompok Kontrol			
	Pre-test		Post-test		Pre-test		Post-test	
	n	%	n	%	n	%	n	%
Good	0	0	32	100	0	0	0	0
Enough	0	0	0	0	0	0	0	0
Less	32	100	0	0	32	32	32	32
Total	32	100	32	100	32	100	32	100
Wilcoxon Sign Rank Test	p=0.000				p=1.000			
Mann Whitney U test					pre-test p=0.786			
					post-test p=0.000			

The action of sports extracurricular members before being given intervention in the treatment group shows that all respondents were in the category 'less' at 100%. After being given a health education intervention with the TGT method, the results in the treatment group increased by 100%. All respondents were in the 'good' category. Results in the control group during the pre-test showed that all respondents were in the category 'less' at 100%. At the time of the post-test, there was no change in the results.

Statistical test results obtained in the treatment group had a  $p = 0.000$  so that  $p < 0.05$ , which means there were changes in actions before and after the health education intervention using the TGT method. The results of the statistical test between the treatment group and the control group after being given health education had a value of  $p = 0,000$  so that  $p < 0.05$  which means that there were differences in the actions between the treatment group and the control group after the provision of the TGT method of health education. Homogeneity test results showed the pre-test value for action was 0.592. This value is  $< 0.05$  which means homogeneous action data.

#### IV. DISCUSSION

- Effects of TGT method on injury handling knowledge

The TGT method increases knowledge about injury management in sports extracurricular members. The level of knowledge of respondents after being given health education gave better results than before being given health education [15]. For the level of knowledge of the control group during the pre-test, almost all respondents were in the category of insufficient and a small proportion was in the sufficient category. After the post-test was done, the same was the most is in the category of lack and there were 2 respondents experienced a decrease when the pretest had a category of knowledge sufficient to be a

category lack of knowledge. This can occur during the data collection process if two respondents chat with each other which causes respondents to concentrate less when answering questions. Additionally, the control group did not get information about how to handle sports injuries.

Knowledge, besides being influenced by health education, can also be influenced by several external factors, namely information from electronic and print media [16]. Respondents had never received information about how to deal with injuries so that when they were unable to answer in the pre-test, after getting the information, their level of knowledge could increase. Meanwhile, the control group did not experience an increase in knowledge because they did not get the information.

The application of educational methods for the cooperative learning model can provide a different learning atmosphere with study habits in the classroom. The health education method used was the TGT method. The results showed an increase in knowledge after being given health education. The TGT method has a student-centered characteristic focused on constructing student knowledge, whereby students are expected to find out important information for constructing their knowledge [17]. The TGT method is a method that incorporates a game element, where respondents will compete between teams to get extra points for their team's score [17]. The TGT method is fun because of it involves games that make students active. The TGT method means that students are involved in the learning process actively. One of the fun things in learning is doing it through playing the game. If this activity made the students relaxed, then they are open to learning, not too stressed or tired, and educational games can be accepted by them [18]. So that respondents can be interested in following the delivery of information carefully with the Team Games Tournament method. The advantages of the TGT method can improve cooperation between respondents so that the atmosphere of giving information becomes more lively and not boring; increase tolerance between team members and information providers; foster self-confidence because respondents have the freedom to interact and argue; and besides, this method can make respondents more relaxed because there is a game tournament. When the information provided is interesting and not like learning in class, the respondent is more interested and can remember the information conveyed. Easier ability to catch students' attention when providing interesting information can improve memory. Respondents cannot answer the questions correctly because the questions are theoretical, and the respondent has never been given the correct information. After providing information, respondents can answer correctly because they already know the answers and have gained experience in the area of health education.

Notoatmodjo [16] revealed that knowledge is the result of *tofu* and occurs after the individual senses an object. The results of the study relate to the theory of PRECEDE and PROCEED (1991) in [19] stating that health education can influence predisposing factors, namely knowledge, where predisposing factors can change a person's behavior. When the respondent gets information about injury management, the respondent can analyze it, remembering it to contribute to knowledge as well as experience.

Health education is the thing that influences the increase in knowledge. The method used is an important factor in the success of information delivery. This research was conducted by providing health education using the TGT method for sports extracurricular members because it can help in increasing the knowledge of sports extracurricular members. A significant increase in knowledge occurred in the treatment group of respondents after they were given an intervention. So it can be seen that the TGT method is effective as a health education method for increasing the knowledge of sports extracurricular members.

- Effects of TGT Method on Injury Handling Attitudes

The TGT method causes attitudes to become more positive. The TGT learning model is one type of cooperative learning that places students in learning groups consisting of 5 to 6 students who have different abilities, ethnicities, and genders [20].

The TGT learning model is used as an alternative learning method, in which learning can improve students' mathematical problem-solving abilities [21].

Knowledge will create responses to thinking that will involve emotions and beliefs in individuals to do the right thing. Rizona [22] revealed that health education can change children's attitudes. But not all respondents who experience an increase in knowledge will experience a change in attitude too because the response of each individual in terms of changing attitudes can be varied [23]. Attitudes can be changed if given continuous intervention for a long time.

The results showed that the majority of respondents in the treatment group were in a negative attitude category during the pre-test. After being given a health education intervention using the TGT method, there was an improvement in a positive direction. The results of the control group showed that most respondents were in the negative attitude category during the pre-test. The post-test results in the control group did not experience a significant change in attitude. The attitude category in the control group did not change because the control group did not get exposure to information about how to handle injuries. Attitudes are not innate, but attitudes can be formed from experience and information obtained [24].

Attitude is an individual reaction to a stimulus, so it is still closed and cannot be seen directly. The results of the study are according to the theory of PRECEDE and PROCEED (1991) in [19] which revealed that health education influences predisposing factors, ie attitudes, which can result in changes in individual behavior. Notoatmodjo (2010) revealed that attitude is not yet an action or activity, but it is an action of behavior. Health education is a system that influences the formation of attitudes because it can underpin the understanding and moral concepts in individuals.

Previous treatment groups have been given information about how to handle injuries so that knowledge is increased and can be accepted, thought about and remembered, so this shows there is an intention or attitude formed by the information obtained.

- The Impact of the TGT Method on Injury Prevention

The TGT method enhances injury prevention skills because of the body. The value of the action in the treatment group increased (42.2%), whereas in the control group it did not increase. This study is in line with the research of Darnawan [25] which revealed that there is an influence of the learning model of TGT on skills or actions.

Changes in behavior, according to Benjamin Bloom in [16], can be linked to the cognitive domain, measured in terms of increasing knowledge; and to the affective domain, measured from the increase in attitude (attitude); and the psychomotor domain, measured by psychomotor practice (action). Interventions that are carried out repeatedly can make the respondent get used to conditions in dealing with certain situations making the respondent accustomed to things that must be done when sports injuries occur.

The PRECEDE and PROCEED (1991) theory in [19] revealed that the provision of health education can change predisposing factors, supporting factors, and driving factors. In this study, the focus for predisposing factors is to change knowledge which is one of the factors forming new actions. Health education plays an important role in changing a person's behavior in a positive way [25].

The factors that influence individual knowledge are related to experience [16]. The way respondents pay attention when exposed to information on how to handle injuries, respondents pay attention to carefully. Respondents observed how to handle injuries using the RICE method and how to engage in mediation through the facilitator. When introducing a game about how to handle injuries, most of the respondents could do the treatment according to what was described by the respondent.

Achieving the ability to handle injuries during training or competition requires good knowledge and a positive attitude about how to properly handle injuries. Respondents were able to handle injuries correctly and properly in handling RICE

injuries, acceleration, and treatment according to the type of injury, after being given intervention in the form of health education using the TGT method. So, it can be seen that the TGT method is effective as a health education method for changing the behavior of sports extracurricular members.

## V. CONCLUSION

Health education using the Team Games Tournament (TGT) method increases knowledge, the ability to take injury prevention measures and changes attitude so that it is more positive among sports extracurricular members. Health education using the TGT method can be used as an alternative to the delivery of information about health behavior among adolescents.

## CONFLICT OF INTEREST

No conflicts of interest have been declared.

## ACKNOWLEDGMENT

The author of this study would like to thank the Faculty of Nursing for providing the opportunity to present this study.

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