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ORIGINAL

THE EFFECT OF TRAINING USING THE COMPREHENSIVE METHOD IN ULTIMATE FRISBEE

EFFECTO DEL ENTRENAMIENTO MEDIANTE EL MÉTODO COMPRESIVO EN ULTIMATE FRISBEE

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ABSTRACT

This pre-experimental research was aimed to evaluate the effect of training using the comprehensive method on the effective of the tactic in ultimate frisbee. We used a game of ultimate frisbee (40 minutes) for the assessment of offensive tactical principles before and after exercise with a Comprehensive Training Method. The purpose of this review was to examine 12 subjects aged 14.3 (\pm 1.1) years, during 24 sessions of 90 minutes. The results of this study show positive results in an increase (79%) of the play-action ($p < .001$), like a penetration, mobility and transition. After stimulation with small sided games increase the number of appropriate actions. Preliminary data indicate a change between passive play and active play. Considering the reviewed conditions can be concluded that the use and the training comprehensive method has positive effect on the tactical offense in ultimate frisbee.

KEYWORDS: Ultimate Frisbee, offensive tactics, comprehensive method, decision making.

RESUMEN

Esta investigación pre-experimental tuvo como objetivo evaluar el efecto de un entrenamiento mediante el método comprensivo sobre la táctica ofensiva en ultimate frisbee. Se empleó un partido de ultimate frisbee de 40 minutos para la evaluación de los principios tácticos ofensivos antes y después del entrenamiento comprensivo. Se intervinieron 12 sujetos con edades de 14,3 ($\pm 1,1$) años durante 24 sesiones de 90 minutos. Los resultados muestran un efecto positivo en el incremento (79%) del total de las acciones de juego, en las que se encontraron diferencias significativas ($p < .001$) en los principios tácticos ofensivos de penetración, movilidad y transición; se aumentó el número de acciones apropiadas en la evaluación post entrenamiento. Este aspecto se entiende como un cambio de un juego pasivo a un juego más activo y eficaz. En conclusión, el entrenamiento mediante el método comprensivo tiene efecto sobre la táctica ofensiva en ultimate frisbee.

PALABRAS CLAVE: Ultimate frisbee, táctica ofensiva, método comprensivo, toma de decisiones.

INTRODUCTION

The comprehensive method conceives of learning as a process inseparable skill of decision making and understanding of the task. In understanding this method is a key element in the process of learning of sports physical activities (Moreno, 2001). Devis and Sanchez (1996) suggest that education through gaming tool strategies are used as questions about the game, comments on the purpose, discussions about the game, in order to develop strategies that impact on tactical understanding game.

Devis and Peiro (2007), claim that the comprehensive approach also takes into account the rules that make the problems and give structure to situations that must be overcome, therefore, will have priority in solving problems during the course of game. This situation has a progression from global to specificity, ie from sporting games in space or modified after transfer situations sports goal and finally the standard sport. These aspects of the comprehensive method or TGFU (teaching games for understanding) had already been explained in detail in 1982 by Bunker and Thorpe, who made a description of six key aspects of the method, among which stands out the tactical awareness and decision-decisions.

There are some experimental studies with comprehensive method or TGFU. For example, Hastie and Curtner (2006) conducted a study in order to examine the influence of TGFU in the learning of the tactics of some games (batting, bowling, pitching, playing outside). They found positive effects on the ability to understand, appreciate and implement actions, in addition, youth were able to transfer this knowledge from one game to another. On the other hand, Harvey et al., (2010) conducted a study to evaluate the effect of teaching and learning through TGFU in footballers. They found significant changes in several aspects, among which are highlighted in defensive aspects ($p = 0.00$) in the game without the ball and game performance, it also led to faster responses and quicker reactions during game.

In ultimate frisbee, (Kelly and Duell, 2007) there was a proposal of training by the comprehensive method or TGFU explained in the game of attack and defense, with a level of prior technical mastery of situations two players against a player and up to three against two, which shows a load progression leading from the use of a small space and fewer materials to the inclusion of more targeted players in the game.

In sport tactics other investigations have been conducted, however, until recently have been developing assessment instruments tactics, for example, Chatzopoulos, Drakou, Kotzamanidou and Tsorbatzoudis (2006) conducted an experimental study using girls to investigate the effects of training on technical and tactical football. In technical education actions were used exercises with the ball, while the tactics were employed in games with modified rules and space, then, in the first group of 37 girls, 12-13 years old, were taught football for 15 sessions with a technical approach and the second, 35

girls, with an approach that used games. Participants were evaluated at the beginning and end of training through filming. They found that the group that participated in teaching soccer through modified games had more significant scores in the tactics than the only training group technique.

Aguilar and Ramon (2007) conducted a correlative descriptive study with the purpose of evaluating the effectiveness in solving problems (decision making and execution of the passes) during the development of the game of 10 passes. For this purpose, we used a qualitative questionnaire which assigned a numerical value of 0, 1, 2 and 3 to the passes being made by players during the game. For example, the precision passings to unmarked players are rated with a value of 3 and passes when the ball was lost was scored with 0. The analysis of these variables showed some differences between sex, age and grade level. It was concluded that mental decisions and executions of these young people improve in relation to the grade level they belong; higher the grade the better the performance in the game.

In basketball, Dominguez (2008) conducted a study in which several validated questionnaires to assess the tactical decision in direct deadlock in basketball. The questionnaires that were investigated consisted of items that watched the offensive and defensive possibilities that might arise in the game, with a numerical score between 0 and 5. The rating scale was a tactical decision as an instrument for the analysis of various actions of attack and defense in basketball.

Other correlative descriptive study conducted in tennis field (Garcia, M. Moreno, Moreno A., Iglesias, and Del Villar, 2009) also used a numerical methodology (systematic observation) to assess decision-making and technical implementation a numerical scale from 0 to 3, with the aim of analyzing the level of expertise (technical skill) and cognitive skills during the game. They found a high correlation between declarative and procedural knowledge, i.e. the technical execution and decision making of the players, therefore, concluded that there is a cognitive component within the tactical action game.

Moreover, some studies mention the use of comprehensive method or TGFU in order to get results by learning from sports games, such as: Graça and Mesquita, 2007; Gubacs, 2007; Harvey, Cushion and Massa, 2010; Hastie and Curtner, 2006; Hopper, Butter and Storey, 2008; Mendez, Valero and Casey, 2010; Pearson and Webb, 2008, and recently conducted a systematic review of the methods of teaching in school sports and found that comprehensive method or TGFU gives importance to tactical component of the game also seems to have cognitive implications on students as having an intelligent participation in the game (Graça and Mesquita, 2007).

Researches on tactical actions have used systematic observation as a qualitative and quantitative methodology for numerical evaluation of the tactic. Similarly, Devis and Peiro (2007), recommend the systematic observation as a strategy to assess the efficiency of decision-making during play real sports. Among the studies mentioned some develop assessment decisions as an important aspect that accounts for the tactics in the game and in addition to a possible relationship with motor learning

processes and cognitive learning. According Pozo (2008), cognitive learning is the acquisition of skills through practice or exercise techniques for the game, for example, raise the Sicilian Defense in Chess. This is related to learning strategies for learning motor uses only very stable and predetermined conditions that always work well, while strategies are implemented procedures requiring controlled way have control beyond the technical implementation and require some degree of conscious reflection by three essential tasks: 1. The selection and planning of the most effective in each case, 2. The supervising their implementation; 3. Evaluating the success or failure obtained. Then, without technique there is no strategy, but the strategy is more than technique because the effective use of a strategy depends largely on the mastery of techniques that compose it. In turn, that domain is better the more automated are those actions as a result of practice. Moreover, Gutierrez (2003) proposed that cognitive development in adolescents covers all mental processes used to acquire knowledge or awareness of the environment, including perception, imagination, judgment, memory and language, i.e., the processes that people use to think and decide. Therefore, if we are to train cognition should be directed through the practice of the execution components and the components of knowledge acquisition through an environment that has available, accessible and easy for there to be a gradual automation of the when executing the tasks to solve a problem.

Therefore, reference should be made to the tactical as responsible for the selection of the response of the player in a game situation specific. That is, decision making or response selection, is a tactical character that could involve a cognitive process. Gutierrez (2003), states that the cognitive learning memory ensures retention or storage of information with the same characteristics as received. The memory is also known as the ability to recall words, numbers, signs or placement of objects, the ability to store visual distribution of movements in solving a motor problem. A low memory capacity has a high impact on athletic performance because there is an alteration in the storage, processing and retrieval of information so as to create gaps in the incorporation and consolidation of new information (Ramirez, 2007). However, Kandel (2007), states that the memory may experience significant and lasting changes through relatively short workouts, but the perfection of memory is achieved through repetition. This will explain the two stages; the short-term memory lasts a few minutes while the long-term memory can last for days or a lifetime.

For Garcia L. et al., (2009) the cognitive process of decision making, is the process of response selection, in the real context of play. In sports dominated open skills, perceptual or external regulation, as opposed sports cooperation, greater complexity conjecture about decisions. According to experiments McMorris et al., (2009), the effect of exercise on soccer decision-making, with the hypothesis moderate intensity (70% VO₂max) exercise, has a positive effect, ie, participants were evaluated at rest and between 70 and 100% of VO₂max, they found that the levels of good performance in tasks involving visual search of football related actions slides also allowed long-term memorizing different positions of the attackers and defenses. Therefore, it is stated that the exercise had a positive effect on the speed of decision making in soccer players with experience. However, in team games the decision making situation also requires

the player perceives the situation, keep what you see in the short-term memory and compare the current situation with past experiences stored in long term memory and finally act. So this is a working memory task that activates the visual notebook spatial and central executive. However, the players must have experiences that must have been well learned. Exercise intensity plays an important role in decision making, the effect of exercise can be understood as an inverted "U", moderate intensity exercise has a positive effect and high intensity exercise sometimes a negative effect. This is because the levels of excitement for the high levels of intensity, despite physiological resources continue to increase; we are not able to allocate resources to the task or action, while moderate levels of arousal to performance can be very good. Moreover, some authors, cited by L. Garcia et al., (2009), argue that the decision-making process in an action game set various stages before an execution. It begins with a cognitive phase in which the player is faced with a problem (in the game) to be solved, for this, he analyzes the context of the visual channel to identify some characteristics of other information while recovering his memory and evaluates all information in this way, all integrate this knowledge to make a decision. Within this cognitive approach, decision making is influenced by the structures of knowledge or experiences that are stored in memory. In this way, the sport is seen as a complex system of knowledge production on concurrent situations and past events combined with the player's ability to perform technical skills.

Currently, ultimate frisbee sport has grown; according to the census of 2009, the World Flying Disk Federation (WFDF) states that the number of elite ultimate frisbee players is 1'000 .000 people, roughly, the entire world. The WFDF organizes world tournaments involving adolescents and adults, men and women, representing 35 countries, among which include Canada, USA, Australia, Switzerland, Japan and Finland. Colombia has repeatedly played in the top tournaments in the world, recently crowned world champion in the "sub-20" women. On the other hand, the Ultimate Players Association of Colombia, Eafit University since 2007 and the Institute of Sports and Recreation in Medellin, organize national and international tournaments in ways as female, male, mixed, and collegiate university in which has reached a participation of 400 players.

Although there is little literature ultimate Frisbee sport, some texts present a description of the technical movements like throwing frisbee, receptions and basic tactical aspects as: Baccarini and Booth, 2008; Parinella and Zaslów, 2004; Tejada, 2009. Although Kelly and Duell (2007), made a proposal for understanding exercises ultimate frisbee by tactical games or TGFU (Tactical games for understanding). Moreover, there have been some research on the biomechanics of Frisbee Throwing (Hubbard and Hummel, 2000, 2001, and Lorenz, 2006), however, the tactic has not been the target of study, then it is essential to implement research to structure and characterize the teaching and learning processes, as has been done in other team sports, such as football, basketball and handball, enabling experimentation with teaching methods that have worked in other sports and that are important to optimize tactical training process.

This context implies that there is interest in evaluating the effect of a training plan based on the comprehensive method on the tactical offensive in ultimate Frisbee sport.

METHOD

The present work is a pre-experimental study with no control group. Was used as a pre test and post test an ultimate frisbee game of 40 minutes. The subjects in the study had to have a proper development of the technique of frisbee throws and frisbee receptions. This was established by a technical test before starting the investigation. For this purpose, each subject had hit eight of ten passes with the frisbee, a distance of 15 to 25 meters. At the start of each training session the students who participated in the session should be asleep at least six hours last night. At the end of training macrocycle only assessed students who participated in the 80% of the training sessions, ie at least 19 sessions. The subjects' cognitive development was established by the Lara asserting (1994), who argues that since the age of 11, at the stage of adolescence, human cognitive development is seen as a grown man.

PARTICIPANTS

The study was conducted with 12 students (men) intentionally selected with an average age of 14.3 (± 1.1) years. Parents of teenagers signed informed consent and Research Center in sports science (CICIDEP) from the University of Antioquia approved the study.

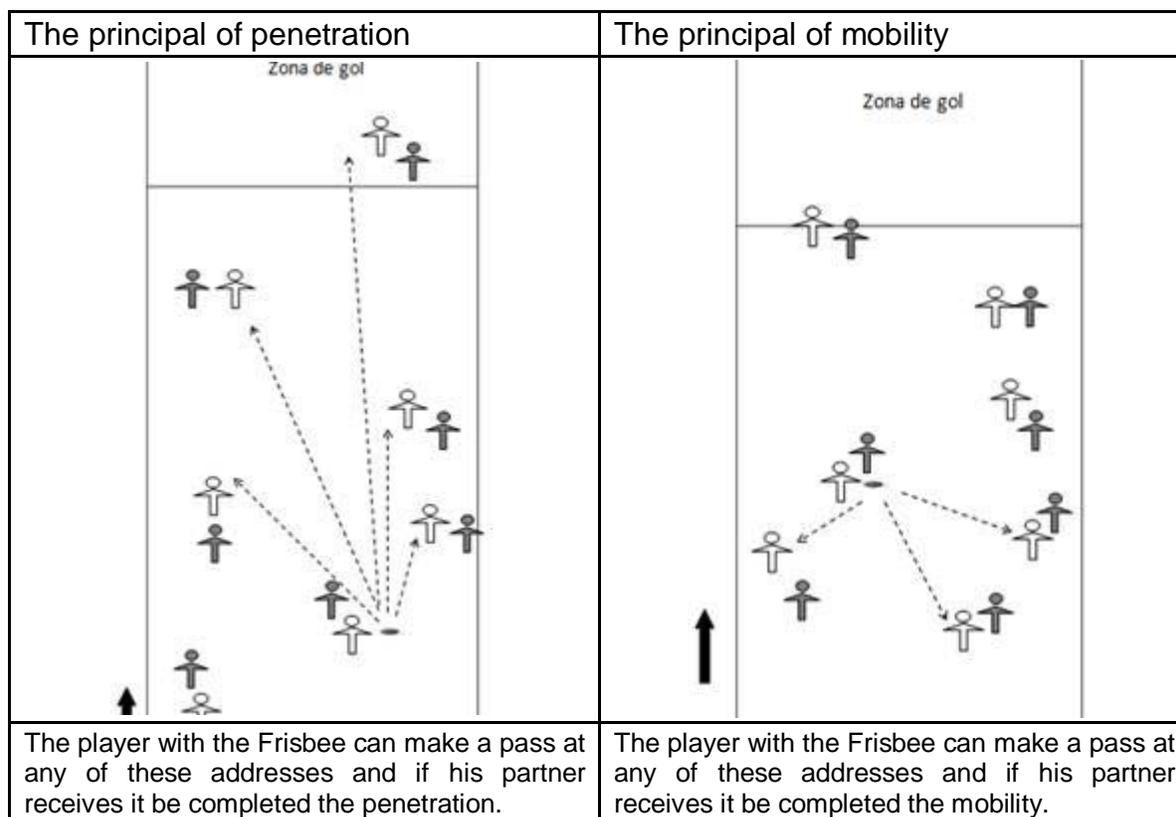
VARIABLES

The independent variable was the comprehensive method (see Table 2) and the dependent variable was categorized in offensive tactical principles called penetration, transition and mobility. The tactical principles were counted by the sum of the observed actions in the video, n transitions, n penetrations and n mobility's, in turn, were assigned a numerical value from 0 to 3 according to the appropriate and inappropriate actions within the game; methodology used by Aguilar and Ramon (2007).

The tactical principles presented in the game were established following the categories used in the analysis of tactical studies as: L. Garcia et al., (2009), Garcia, Ruiz and Graupera (2009) and Ortega, Villarejo and Palao (2009). The following explains each of the offensive tactical principles.

The tactical principle, transition, defined as the change in the role of attack to defense or vice versa. The tactical principle, penetration, defined as a step towards the endzone opposite by throws and receptions; mobility was defined as the throws and receptions that showed no progress but retrogression or laterality (see figure 1).

Graph 1. The penetration and mobility during the game in ultimate frisbee.



Then, we assigned values between 0 and 3 to qualify appropriate and inappropriate actions during mobility, penetration and transition. These in turn are subdivided into two categories, category one (thrower) and Category 2 (receiver), because all actions involving a pass from player to player with the frisbee.

1. *Thrower Category*, the player who has possession of the frisbee and going to make a pass.

1.1 *With 0*. It runs a wrong pass: The player with possession of the frisbee chooses to pass to a teammate who is ill positioned to receive, i.e. marked. Also if you make a pass inappropriate for the situation, for example, sharp curve, excessive speed, normal is to be clearly oriented towards a partner to make a pass straight and chest. Also if you do not make the pass to teammate who was clearly unfit for receiving. Also when there is assigned zero count.

1.2 *With 1*. It runs a wrong pass: The player with possession of the frisbee is directed towards a partner who could get the frisbee, but made a wrong pass.

1.3 *With 2*. It runs a pass good: The player with possession of the frisbee is directed towards a partner who was not well placed to receive a mark or meet with defense, but performs a pass-reception achieving continuity of play or a goal.

1.4 *With 3*. It runs a pass good: The player with possession of the frisbee runs a pass to a player who is unmarked.

2. *Receiver Category*, Players who intend to receive the pass.

2.1 *With zero*. Not received the frisbee: The player uses an inappropriate mechanism in the reception technique; normal is sure to employ all means not to drop the frisbee.

2.2 *With 1*. Incomplete reception frisbee: The player uses a suitable mechanism for the reception but the frisbee is dropped as a result of the defense team.

2.3 *With 2*. There is a good reception: The player receives the frisbee when this free of mark.

2.4 *With 3*. There is a good reception: The player receives the frisbee in the endzone. The player receives frisbee between defense and scores a goal.

The independent variable, the comprehensive method, was based on four pillars, cited by Moreno (2001): 1. Knowledge about the executions, this refers to the technique. 2. The schema theory, refers to the graphical representation of the game. 3. Variability in practice, refers to the variety of games and exercises. 4. The transfer function relates to the applicability of training in sports games. It also took account of the teaching model of Bunker and Thorpe (1982) referred to six items: 1. Modified games, to promote understanding of the game. 2. The appreciation of the game, in order to orient the teacher cooperation between them. 3. The tactical awareness, in order to identify the important offensive and defensive advantage for the opponents. 4. Decision making, refers to propose adequate solutions according to the gaming context. 5. The proper execution, in order to have students identifies and hones their importance in the game. 6. Game performance, with the aim of making the games more and more representative than the formal game.

Box 1. Training volume in comprehensive method.

The volume that was used in the experiment was classified so, see Table 1:

Exercises during training	Minutes	Percentage
Warm up at the beginning of each session	240	11,1 %
Cool down	120	5,6 %
Explanation of the game, comments during the game (forward and feedback)	60	2,8 %
Low intensity games	135	6,3 %
Moderate intensity games	670	31,0 %
High intensity games	935	43,3 %
Overall Volume	2160	100 %

The characteristics of the games that are used with respect to the training intensity are described below:

LOW INTENSITY GAMES

The number of players on offense and defense must be equal.

The play space is equal to or less than 20 meters by 20 meters.

The duration of the game is equal to or less than 10 minutes.

The breaks occur actively during the game, i.e. not scheduled.

Includes training throws (backhand, forehand and hammer) and receives moving targets over twenty meters.

MEDIUM INTENSITY GAMES

Players participating in the game have specific tasks for the attack.

The play space is equal to or less than 20 meters by 40 meters.

The duration of the game is given by the fulfillment of the objectives, there is no set time.

The rest will be 30 seconds after the goal is met.

During this time the coach will make suggestions about the game.

Includes running training (anaerobic type alactic) through running games.

HIGH INTENSITY GAMES

The tasks in the game are made with a specific time, e.g. 30 seconds to score goal after winning the frisbee.

The game space is higher than 20 meters by 40 meters.

Players must adhere to the rules.

The rest will be 30 seconds after the goal is met.

During this time the coach will make suggestions about the game.

Includes speed work on gambling trips with frisbee.

The training lasted two months with a frequency of three times a week and last for 90 minutes per session.

Table 2. Training plan for comprehensive method or TGFU.

Session	Content of the session
1	Explanation of the training plan. Low intensity games. Games for compression transition tactical principle.
2	Games for the development of the transition. Games of low, medium and high intensity.
3	Explanation and games for understanding the principle of mobility tactical offensive. Games low and medium intensity.
4	Games for the development of mobility. Games low and medium intensity.
5	Games for the understanding of the principle of offensive tactical penetration. Games low and medium intensity.
6	Games for the development of penetration. Games medium intensity.
7, 8 y 9	Games that combine penetration and transition principle. Games medium intensity.
10, 11 y 12	Games with high intensity. Fictional situations that occur near the endzone.
13, 14 y 15	Games that combine mobility and penetration. Games medium intensity.
16, 17 y 18	High intensity games. Applying the three principles, transition, penetration and mobility.
19, 20 y 21	High intensity games. During the game use the following order, mobility, penetration, mobility. Also, transition, mobility, penetration.

22, 23 y 24 High intensity games. During the game use the following order, mobility and penetration. Also, penetration, mobility.

For analysis of the dependent variable, an observer recorded the number of appropriate and inappropriate actions (with values between 0 and 3) that occurred during the game of ultimate frisbee. We used SPSS (V.15) to calculate the chi square (χ^2) between pre and post training data in order to identify changes between mobility, penetration and transition tactical principles.

TOOLS

We used a log sheet in tabular form for the rating and categorization of the passes and of the offensive, penetration, mobility and transition tactic principles, based on Aguilar and Ramon (2007). Two video cameras, Samsung SC-DC171. The pitch used was a soccer field measures 40 meters long and 20 meters wide, the endzone was adjusted to 10 meters across the field.

PROCEDURE

We selected a group of high school students participating in sports and recreation in Medellin, and committed parents and children with informed consent of the research. For the experiment filmed a game of ultimate frisbee than 40 minutes, versus a team from the same institution in the same age and sex, using two cameras simultaneously, one static and one moving. Subsequently performed 24 training sessions, 3 times per week by the comprehensive method. then filmed the ultimate frisbee game against the same team that participated at the beginning; analysis was performed of the variables. Compliance was counted tactical principles by questionnaire (systematic observation) to qualify the tactical offensives from 0 to 3, before and after training, also applied the chi square test to analyze significant differences.

RESULTS

Below are the results regarding the effect of the method comprehensive on the tactical offensive measurement through the penetration, transition and mobility tactical principles.

In Table 1 presents the sum of actions offensive tactics that were found before and after training. It is observed that in the pre-training game analyzed 159 actions while the post-training game analyzed 287 actions; there was an increase of 79%. Moreover, the penetration principle protrudes with the largest number of actions post-training (226), an increase of 66%. However mobility actions (42) represented an increase of 320% and the transition only 40%.

Table 1. Total actions for mobility, penetration and transition before and after training. ↑ = indicates percentage increase.

Offensive tactic	Pre training actions	Percentage	Post training actions	Percentage
Mobility	10	6 %	42	320 % ↑
Penetration	134	84 %	226	66 % ↑
Transicion	15	9 %	21	40 % ↑
Total Actions	159	100 %	287	79 % ↑

Table 2 shows the value from zero to three (0 = poor, 3 = very good), corresponding to each of offensive tactical principles before and after training. It notes that the actions with value of 3 obtained an increase in the first offensive tactical mobility and penetration, 104 and 21, respectively. The calculation of chi square with respect to the principles of mobility and penetration showed significant differences before and after training ($p < .001$) and for the transition $p = .006$.

Table 2. Sum of actions that occurred in offensive tactics with values between 0 and 3 for penetration, mobility and transition tactical principles. * Significant ($p < .05$).

Offensive tactic	Value = 0		Value = 1		Value = 2		Value = 3		p
	pre	post	pre	post	pre	post	pre	post	
Penetration	14	17	14	20	48	81	58	104	< .001*
Mobility	0	1	0	2	5	18	5	21	< .001*
Transition	0	0	5	12	9	7	1	2	.006*

Table 3 presents the comparison between the sum of the outstanding value of 0, 1, 2 and 3 before and after training. It is observed that there is a general increase in each of the actions and the calculation of chi square indicates that differences were highly significant ($p < 0.001$) between the tactical offensives before and after training.

Table 3. Comparison between actions with value of 0, 1, 2 and 3 that occurred before and after training and the calculation of chi square. * Significant ($p < .05$). ↑ = indicates actions increase.

Offensive tactic	pre training	post training
Value = 0	14	18
Value = 1	19	34 ↑
Value = 2	62	106 ↑

Value = 3	64	127 ↑
Value of "p" pre-training and post-training		< .001*

DISCUSSION

The tactic is an aspect that should be taken into account in the assessment of how sports, however, the mechanisms for evaluation is complex due to the number of variables surrounding the game scene. Currently, the game can be categorized in defense or attack actions that allow performance analysis against each of the players (Chatzopoulos et al., 2006; Domínguez, 2008; Harvey et al., 2010). Moreover, the tactic is subdivided into offensive or defensive principles that reflect key aspects to analyze the development of the game and training can overcome the opponent, Riera (1995) and Field (2001).

Decision making is the focus on tactical training. According to Garcia L. et al., (2009) the process of selection of responses defines the real context of the game, then, is in constant stimuli perception and regulation. However, McMorris et al. (2009) suggests that the decision making is that the player perceives the situation precisely, that employs the memory and in this way act with respect to a past experience. Then, the decision has to do with a cognitive process in which you select the most effective, the actions are executed and evaluated the success or otherwise obtained, in this way is in constant reconfiguration. Therefore, Pozo (2008), states that cognitive learning in the skill acquisition requires some degree of conscious thought to take control beyond the technical execution. Then, the comprehensive method proposed actions that deal with individual and collective skills to realize a rational process that includes real-time scheduling for the good performance in the game. This rational process includes motor learning and cognitive learning, the latter which is directly related to the tactic.

The comprehensive method allows players to experience and repeat many game situations or tactical situations that at the time of competition have many experiences in long-term memory, so that the most suitable is used, depending on the situation game. By the standards that address the comprehensive method, Bunker and Thorpe, 1982 and Moreno, 2001; highlights the graphical representation of games, practice variability and transfer these two have the sport, because of the motivation that causes between youth for training a sport, (Graça and Mesquita, 2007) though, you should have a basic level of technical movements that characterize the sport.

The training plan was based mainly ultimate frisbee game in limited space with the Frisbee (1740 minutes). Changes were used in the size of the space, the number of players on offense and defense, in the objectives and individual and collective tasks, in order that athletes understand the importance of each of offensive tactical principles, penetration, mobility and transition, in achieving the goal. Table 2 shows that there were changes in the number of actions, with statistical significance ($p < .05$). Moreover, it is noteworthy that took effect this training plan on the number of actions (see table 1), from 159 to 287 shares, this aspect is understood as an increase in the speed of the game actions, i.e., changed and slow passive play a more active and fast game, although the

time employed in the evaluation was the same before and after; game of 40 minutes. Also, the value of three actions is changed significantly, from 64 to 127 (see table 3) with an increase of 98%.

The intensity of the games should be taken into account in the training control. McMorris et al., (2009) argue that high intensities sometimes have a negative effect on decision making, then, during the training plan in high intensity games were employed and submaximal intensities in order to reach an adaptation to mental fatigue in more demanding situations in the game. Accordingly, it is stated that the training plan (1605 min) showed positive results because the games had emphasis on medium and high intensity, which was used in line breaks with real game situations, transfer principle at least 30 seconds.

Finally, tactical training by TGFU in team sports should be promoted through the games (Hastie and Curtner, 2006, Harvey et al., 2010) that the athletes experience situations that are essential to maintain possession of the Mobile or frisbee, allowing recreate situations in which the player develop a rationale for the use of an offensive action during the game, in this way, has a smart participation during play, which also influences decisions to select the best movements (motor learning) more quickly than his opponent. These stimuli cause the player is in constant self-evaluation of their actions, so that their participation is always in search of the optimization. A game of ultimate frisbee than 40 minutes can not be taken as unique conclusive to defend the benefits of comprehensive method, it is recommended to consider more games at the beginning and end of the experiment with the same category teams to extend the analysis.

CONCLUSION

Training through comprehensive method has positive effects on the offensive tactic in ultimate frisbee. It showed significant effects on offensive actions corresponding to penetration and mobility post-training. Therefore, training plan serves to improve the individual tactical performance of athletes during real game situation. This aspect is defined as changes from a passive play to a more active and effective game.

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