1 RUNNING HEAD: TGFU AND TARGET GAMES

2 **USING PROBLEM BASED LEARNING TO ENHANCE TACTICAL AWARENESS IN**

3 **TARGET GAMES**

4

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3   **I. INTRODUCTION**

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6   The area of Teaching Games for Understanding (TGFU) is an exciting and emerging

7   field. Although this approach has been around for over three decades (Werner, Thorpe, &

8   Bunker, 1996), there still exists a lack of practical TGFU applications in the area of target games.

9   This is surprising given that target games have the least complex game structure (Butler, 1996)

10   and therefore can serve as an ideal place to introduce TGFU principles. Target games have been

11   defined as "… games in which the performer propels an object, preferably with a high degree of

12   accuracy, at a target" (Griffin, Mitchell, & Oslin, 1997, p. 7) and include formal games such as

13   golf, bowling, curling, boccia, and shuffleboard. In Canada, target games such as bowling and

14   golf are often reported within the top 10 list of most popular physical activities amongst adults

15   (Cragg, Cameron, Craig, & Russell, 1999).

16   The purpose of this paper is to illustrate how target games could be used to introduce the

17   TGFU approach to students and how this approach is effective at enhancing student learning and

18   game performance across many different target games. The entire process is based upon a

19   problem-based approach to learning whereby students are active decision-makers and thus

20   develop a sense of ownership throughout the entire process.

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23   **II. STEP 1. INTRODUCTION TO TARGET GAMES**

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2   The first step of this process, based upon Bunker and Thorpe's (1986) model, involves

3 students taking part in formal or modified target games to develop a sense of relatedness towards

4 target games.

5

6 *Organization.*

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8   To maximize participation, teachers can divide the class into groups of four. Depending

9 on equipment availability, teachers can then choose to have students rotate to different target

10 games or to have all of the groups take part in the same activity.

11

12 *The Games.*

13

14   Although almost any target game or modified version could be used, the three target

15 games that are illustrated for the purposes of this chapter are floor curling, Paralympic Boccia,

16 and shuffleboard (see Table I). These target games are simple enough to initially allow students

17 to play as close to the formal game as possible. Participants take part in these activities and then

18 are asked to generate ideas on how to improve their offensive and defensive capabilities in each

19 of these games by reflecting on: a) How can a team increase its chances of scoring; and, b) How

20 can a team decrease the other team's chances of scoring (see Table II).

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1   Table I. *Rules for Floor Curling, Shuffleboard, and Paralympic Boccia.*

|	Floor Curling www.telusplanet.net/public/pchenier/curling.html	Shuffleboard www.fsa-shuffleboard.org/Rules.html	Paralympic Boccia http://www.paralympic.org/
Area of Play	• See Figure Ia for Area of Play	• See Figure Ib for Area of Play	• See Figure Ic for Area of Play
Equipment	• Sixteen circular indoor disks equipped with handles • The handles of eight rocks are painted one colour and the other eight a different colour • alternatives could include different coloured beanbags	• 8 discs of 2 different colours • 2 shuffle sticks • Shuffleboard court • alternatives could include plastic rings and wooden sticks	• 8 boccia balls making up 2 sets of different coloured balls and one jack (different colour) • alternatives could include wiffle balls with cut elastics tied to them as indoor boccia balls • four wheelchairs or chairs

How to Play	• 8 Players (4 Vs 4)
	• Teams consist of four players: Lead, Second, Third, and Skip
	• Flip a coin to decide which team starts the first end
	• Each lead plays two rocks alternately in proper succession, followed by the two seconds, two thirds, and finally two skips
	• The rock is delivered from behind the toe line towards the opposite circle
	• Rocks are taken from play if:
	  a) player steps over toe line
	  b) rock does not cross the hog-line
	  c) rock comes to rest on its edge, handle, or on another rock
	• After both teams have shot all of their rocks, the team with the rock closest to the centre circle or button shall count a point for each rock that is closer to the button than the other team
	• The team who won the previous end, shoots first in the next end meaning the other team gets the last shot (i.e., the hammer)
		• 4 Players (2 Vs 2)
		• To start game, a yellow disc (or equivalent) is shot first
		• Play alternates-yellow, then black-until all discs are shot.
		• A full game lasts until one team reaches 75 points
		• SCORING AREAS- one 10 point area; two 8 point areas; two 7 point areas; one 10 off point area.
		• After both players have shot their four discs, SCORE ALL discs on the court within and NOT touching lines
		• If disc is completely inside the 10 off , penalty - 10 off
			• 4 Players (2 Vs 2)
			• Team A occupies boxes 1 and 3 and Team B boxes 2 and 4
			• Each player gets 2 balls
			• Team A always initiates the first end
			• Order of throwing out the jack: A1, B1, A2, B2
			• Each player initiates one end with the control of the jack ball and first shot
			• When the ball is released, a player must have at least one buttock in contact with the throwing chair
			• At the beginning of an end, Team A throws, Team B throws one ball
			• The side to throw next will be the side which does not have the closest ball to the jack
			• This procedure will continue until all balls have been thrown by both sides
			• If the jack ball is knocked out of court during the match, it is re-positioned on the "Replaced Jack Cross".
			• After all balls have been played, the side with the ball closest to the jack ball will score one point for each ball closer to the jack then the opponent's closest ball to the jack.

1   Table II. *Potential Tactical Solutions to Tactical Problems across Target Games.*

Game	How Can a Team Increase its Chances of Scoring?	How Can A Team Decrease the Other Team's Chances of Scoring?
Floor Curling	• Put up guards to protect own rocks • Have skip use his/her stick to show a target to help place rocks • Bump (i.e., raise) own rock into playing area • Use aim and accuracy to draw to the button (need proper mechanics in delivery) • Try to get the last shot (i.e., the hammer) in the last end • Angles of approach and angles at which the rock is hit • Controlled use of force • Put rocks at front of house rather than in the back half of the house so that you can bump it back later • Communication with skip	• Knock other team's rocks out (i.e., take-out) • Place rocks in a position so they guard rocks in scoring positions • Spread rocks out to make it difficult to take out more than one at a time
Shuffleboard	• Placing the discs at the front of the playing area and bump it back • Knocking own discs into scoring area (i.e., raises) • Putting up a block (i.e., guard) to protect • Controlled use of force • Use aim and accuracy through proper mechanics	• Knock discs off scoring area (i.e., take-out) • Knock discs into -10 zone • Putting up a block to protect discs in scoring areas • Spread rocks out to make it difficult to take out more than one at a time
Paralympic Boccia	• Throw ball over the Jack and then move the Jack up towards the ball • Controlled use of force • Bump your team's ball closer to the Jack (i.e., raise) • Use an aggressive shot at first to try to be closer • Use aim and accuracy through proper mechanics	• Knocking opponent's ball away from the Jack (i.e., take-out) • Start by throwing the Jack far or close depending on opponent's weakness

2

1   *Figure I.* Set-up for formal target games of Floor Curling (a), Shuffleboard (b), and Paralympic
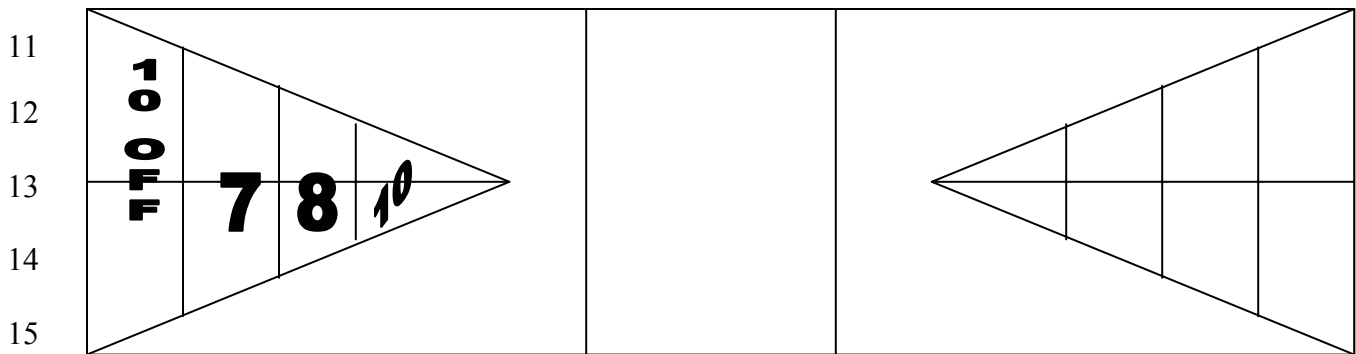
2   Boccia (c)

3

4   a). Floor Curling

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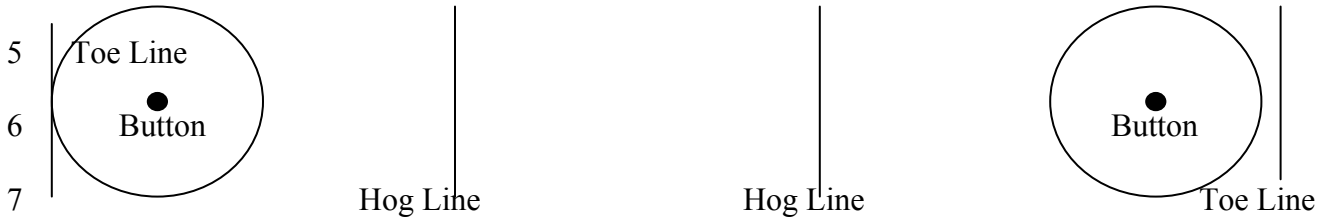
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9   b) Shuffleboard

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16   c) Paralympic Boccia

1	Player A1	Non Target Area	X (Replaced Jack Cross)
2	Player B2		
3	Player A2		
4	Player B2		

17

18

1   **III. STEP 2: ACTIVITIES TO HELP IMPROVE GAME PERFORMANCE**

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4   After taking part in three or more target games and identifying potential offensive and

5   defensive tactical solutions, all of the ideas provided by the students are collected and

6   summarized by the instructor. A list of potential tactical solutions is provided in Table II. It is

7   then important to go back to the students to discuss the appropriateness of their answers and to

8   then use their own responses to stimulate motivation to improve target game performance. This

9   discussion could also focus on the similarities among different target games (see Table III) and

10   that by working on certain elements in one type of target game, their performance can be

11   improved in other target games. The following are four activities that could be used to integrate

12   the students' responses and to enhance their understanding of tactical solutions to improve target

13   game performance.

14

1   Table III. *Tactical Structure of Target Games Category.*

Tactical Problems	Tactical Solutions	
	With Equipment	Without Equipment
Scoring		
Close Proximity to Target	• Aim/ Accuracy • Placement (e.g., draw, lie) • Raise	
Avoiding Obstacles	• Spins/ Turns • Using other objects/ obstacles	Communication
Creating a Dynamic Reaction	• Placement of Contact	
Preventing Scoring		
Defend space/ Objects in scoring position	• Guards • Take-outs	Bound by Etiquette and Rules
Getting Last Shot	• Blank an End or Give up Point (if possible)	

2

3   *Activity #1: Aim and accuracy.*

4

5   Fundamental to all target games is being able to accurately project an object towards a

6   target. This activity is intended to simulate a game situation while at the same time, focus on

7   skill development across a variety of target games.

8

9   *Equipment*: Beanbags, Golf Clubs, Indoor Golf Balls, Various Sizes and Types of Balls,

10   Frisbees, Hoops, Pylons

11

12   *Organization:* 2 Players per team (2 Vs 2)

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1   *Set Up*: See Figure II

2

3   *Figure II.* Set-up for Activity #1: Aim and accuracy.

4

5   Pylons

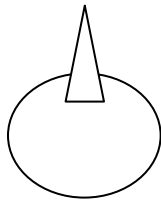6   1   2   3
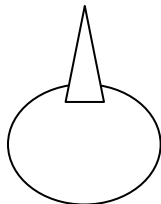
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16   *How to Play:*

17   • The object of the game is to have one team of two players acquire 20 points before the other

18   team does.

19   • Players earn points by projecting an object so that it lands inside a hoop

20   • Points are determined by the distance from which the object is projected. The first line is

21   worth one point if it lands in the hoop; line 2 is worth two points and line 3 is worth three

22   points.

23   • Players can double their scores if they hit a pin/ pylon that is placed in the middle of the hoop

1 • For example, if a person hit the golf ball from the second line and it landed inside the hoop

2 and then hit the pylon, the team would receive a score of 4 (line 2 x 2 for hitting the pylon).

3 • Teams of 2 decide what object they wish to project

4 • The winning team is the first team to earn 20 or more points

5

6 *Follow-up discussion*:

7 Q: What are important things to remember when trying to hit a target?

8 A: Follow through towards target; need to generate enough force to get the object into target

9 without jeopardizing accuracy; take time to relax and concentrate in order to get object into

10 target; block out distractions; plan shot ahead of time.

11 Q: What other target games require aim and accuracy?

12 A: Golf, darts, bowling, archery, pool, curling, etc.

13 Q: What are similar pressures you might face in a "real" game?

14 A: Have to make every shot count; others are watching you; a sense of time pressure; element of

15 risk taking with regards to distance from the target and how much effort will be used without

16 sacrificing accuracy.

17

18 *Activity #2: Guards.*

19 Setting effective guards to protect shots is an important defensive tactic in many target

20 games. This activity emphasizes setting guards in shuffleboard.

21

22 *Equipment*: Indoor shuffleboard set OR wooden sticks and felt rings (2 sets of 4 … each set a

23 different color)

1

2   *Organization:* 2 Players per team (2 Vs 2)

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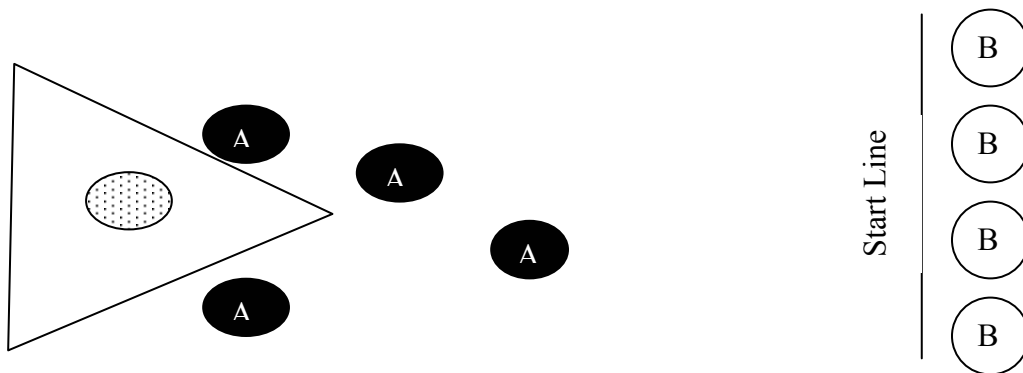4   *Set Up*: See Figure III

5

6   *Figure III.* Activity #2: Guards.

7

15   *How to Play:*

16   • Place a disk(or ring) inside a triangle designated on the floor to represent the 10-point area.

17   • Team A starts by attempting to deliver 4 guards to protect the disc inside the triangle.

18   • Team B then gets 4 shots to try to hit the disk inside the triangle.

19   • Scoring: If Team B can knock away the disc inside the triangle completely outside the

20   triangle, they score 10 points.

21   • If team B fails to knock the inside rock away, team A scores 10 points.

1

2   *Follow-up discussion*

3   Q: What makes a good guard?

4   A: Guards should not be too close to object being guarded; it should be slightly off to the side

5   without exposing too much of the object being guarded; it should be away from other objects in

6   order to cover a lot of space.

7   Q: What other target games use guards?

8   A: Curling, boccia, shuffleboard, lawn bowling,

9

10   *Activity #3: Take-outs.*

11   Being able to take out an opponent's shot is an effective defensive tactic to reduce the

12   other team's chances of scoring in many target games. This game will use a Paralympic Boccia

13   example.

14   *Equipment*: Indoor boccia set OR 4 blue wiffle balls, 4 red wiffle balls, 1 small white

15   wiffle ball, pylons, wheelchairs OR chairs. (NOTE: to add friction to the wiffle balls for inside

16   use, tie elastic bands to the wiffle balls).

17

18   *Set-Up*: Same set-up as Paralympic Boccia in Figure I

19

20   *Organization*: 2 Vs 2

21

22   *How to Play:*

23   • Each team will get 4 throws.

1   • A member from Team A will throw out his or her first ball.

2   • A member from Team B will try to hit Team A's ball.

3   • If team B hits Team A's ball, they get a point.

4   • Team B scores a bonus point if they can knock the other team's ball outside the playing area

5   • If team B misses, Team A gets the point.

6   • All tosses must land in the playing area.

7   • Play an end with Team A and B alternating shots with Team B trying to knock the ball away.

8   • The next end, switch, Team A will try to take-out Team B's balls.

9

10 *Follow-up Discussion*

11 Q: What are the mechanics behind a take out?

12 A: Need to generate enough force to remove an object; can use other objects in play to rebound

13 off of in order to take out a shot that is blocked; placement on the object being taken out (e.g., if

14 want object to be cleared to the right, hit it to the left of centre); can try to take out more than one

15 object depending on the placement of the take-out shot.

16 Q: What other target games are you allowed to use a take-out?

17 A: Curling, shuffleboard, lawnbowls.

18

19 *Activity #4: Draws & Raises*

20   Being able to draw (i.e., deliver) an object to the button (i.e., middle circle) and/or raise a

21 rock so it is closer to the button is an important offensive tactic. This activity will focus on these

22 tactical solutions using a floor-curling example.

23

1   *Equipment*: Indoor curling rocks (or beanbag substitutes), pylons, flat target on floor
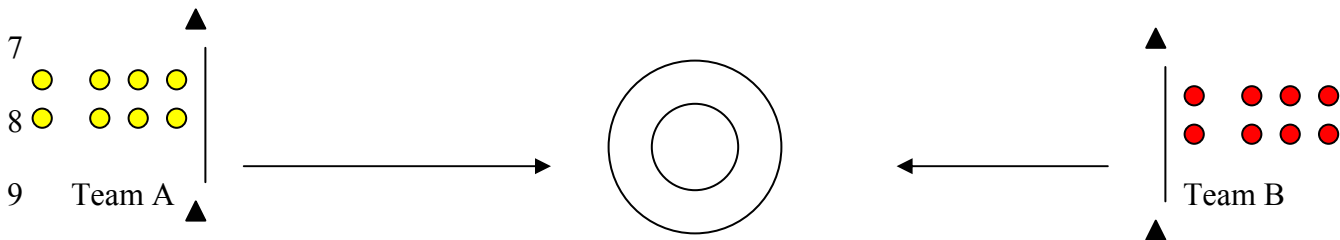
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3   *Set-Up*: See Figure IV

4

5   *Figure IV*. Activity #4: Raises and draws.

6

7

8   Team A   Team B

9

10   *Organization*: 2 teams of 4 (4 Vs 4)

11

12   *How to Play*

13   •   Team A will deliver one rock from their end followed by Team B from the opposite end

14   •   Each person will get 2 shots.

15   •   Score 2 points if the rock goes inside the middle circle on the delivery.

16   •   Score 1 point if a team can knock a rock into the middle circle as a result of a raise.

17   •   The winning team is the team that scored the most points for that end

18   •   Switch shooting order the next end

19   *Follow-up Discussion*

20   Q: How do you effectively execute a raise to the middle circle?

21   A: Need to use enough force and accuracy to get it to the middle circle.

22   Q: Is it better to place your rock short or long?

23   A: Better put it short because you can then try to raise your shot into the circle.

1   Q: How do you effectively execute a raise?

2   A: Need enough force to bump it forward and depending on where the rock is will determine

3   where you want to hit the rock for the raise. For example, if a rock is off to the left side, will

4   want to hit the rock to the left of centre in order for it to travel to the right. If the rock is in the

5   middle, will want to try to hit the rock in the middle to push it straight back.

6   Q: What do you not want to do to the opponent's rock in this game?

7   A: If a rock goes past the centre circle, do not want to knock it back because then it can be raised

8   back into the middle. Therefore, want to try to place your rock around opponent's rock to get

9   into the button.

10   Q: What other target games use draws and raises?

11   A: Pool, shuffleboard, curling, boccia.

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13

14   *Step 3: Back to the Game*

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16   After each student has had a chance to take part in the tactical solution activities, they can

17   then be given a chance to go back to the original games described in Step 1 and play them again.

18   Instructors can then discuss with the students whether they felt their game performance improved

19   as a result of "understanding" the skills and tactical solutions involved in target games.

20   Instructors can also introduce new target games (e.g., bowling, lawn bowls, archery) and talk

21   about how the tactical solutions previously learned in Step 2 transfer well into other types of

22   target games.

1

2   **IV. PEDAGOGICAL IMPLICATIONS**

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4   The series of activities previously described employ the four pedagogical principles

5   adopted by a TGFU approach. These are: sampling, representation, exaggeration, and tactical

6   complexity (Holt, Strean, & Bengoechea, 2002; Morris & Stiehl, 1999). Sampling refers to

7   instructors using different games from the same category and providing students with an

8   understanding of the similarities among games within that category. The previous activities used

9   this principle by sampling from a number of different target games and then discussing

10   similarities among them by using tactical solutions that could transfer across different target

11   games. Game representation refers to creating a game scenario that represents a tactical solution

12   that could be used in a formal game. This does not mean that the formal game needs to be

13   played. Rather, modified games or activities that represent formal games help facilitate

14   understanding. Using game-like scenarios like those proposed in the four tactical solution

15   activities helps the learner to better able implement the tactical solutions when they play the

16   game. The third pedagogical principle is exaggeration. This principle takes a particular part of

17   the game (e.g., setting guards) and then has participants participate in a modified game that

18   exaggerates the skill(s), rule(s), and/or tactic(s). For example, all of the activities described

19   previously exaggerated a certain tactical solution used in target games that the students helped to

20   generate as a result of starting off with a game in Step 1. The final pedagogical principle is

21   tactical complexity. This principle is based upon the premise that there are certain tactics that are

22   more complex than others and there are certain skills and level of understanding needed before

23   more complex tactical solutions can be attempted. In the previous list of activities, the aim and

1 accuracy activity would have the lowest level of tactical complexity. This is due to the

2 importance that aim and accuracy has to the other tactical solutions (e.g., aim and accuracy is

3 important to place guards) and the more static or predictable nature of this activity. The tactical

4 solution activities hence were placed in an order ranging from least complex (i.e., Activity #1:

5 Aim and Accuracy) to the most complex (i.e., Activity #4: Draws and Raises). Tactical

6 complexity can also refer to the complexity of game structure across all four game categories.

7 Werner et al. (1996) argue that target games are generally less complex, followed by net/wall,

8 fielding games, and finally team invasion games, which should be introduced last. This is not to

9 say that target games are "easier", but rather the structure of these games are less complex due to

10 their more static nature. This argument only serves to reinforce the importance of introducing

11 learners to target games when first introducing a TGFU approach. By demonstrating how game

12 understanding and performance can be improved in target games, it can help motivate learners to

13 "buy-into" the TGFU approach to help them improve game performance in other categories.

14   The process outlined in this paper is also consistent with key elements to foster intrinsic

15 motivation. Based upon Deci and Ryan's (1985) self-determination theory, individuals are

16 motivated when they feel autonomous, competent, and related to the activities they are doing. By

17 using a problem-solving approach, individuals achieve a sense of autonomy through a guided

18 discovery approach that encourages them to generate tactical solutions. Individuals also develop

19 a sense of competence throughout the activities by focusing on progressive game improvement

20 and understanding across a number of different target games. Finally, by having participants start

21 off by playing the formal or modified game first, individuals develop a sense of relatedness to

22 the game itself and thus appreciate the importance of the tactical solution activities. As a result,

1   participants are more likely to be motivated by this type of approach than more traditional

2   approaches where they do not always understand "why" they are doing certain drills.

3

4

5   **V. CONCLUSION**

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8   The activities outlined in this paper are intended to help provide a framework to help

9   introduce the TGFU approach to students and to help improve game performance across a

10   number of different target games. Many of the rules, skills, and tactical problems and solutions

11   that are introduced through these activities are very similar to other types of target games and to

12   other more complex game categories. Teachers, coaches and instructors are encouraged to

13   modify the activities and implement the pedagogical principles to suit the learners' needs and

14   abilities. Instructors are also encouraged to build upon these activities to develop a repertoire of

15   activities that will assist learners in improving their game understanding and performance.

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