

Kickball for Students with an Amputation

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Abstract: Amputation is a removal of a limb by trauma, medical illness, or surgery. An amputation can affect mobility and dexterity. The main effect of a lower limb amputation is a reduction of that person's mobility meaning that they will not be able to walk as they did pre-injury or surgery. In the majority of cases after sufficient care and rehabilitation, the injured person will be able to make use of a prosthetic limb. Kickball is a game that was invented in the United States in the early half of the twentieth century, containing elements of soccer and softball/baseball. It was originally used as a game to introduce school children to baseball in United States public schools that originally popularized it as a sport. This version of the classic playground game utilizes low-tech adapted equipment and modified rules. Suggested game variations are provided for different populations of student ability. The skills worked on within this activity are directly related to the National Association for Sport and Physical Education National Standards, the Perkins School for the Blind Adapted Physical Education Curriculum and components of the Expanded Core Curriculum.

1. Introduction

A physical disability is a physical condition that affects a person's mobility, physical capacity stamina, or dexterity (Pennington & Pennington, 2020a). Some examples are epilepsy (Pennington & Pennington, 2020b), brain or spinal cord injuries (Hernandez, Loeung, Washington, & Pennington, 2020), hearing and visual impairments (Pennington & Pennington, 2020c), multiple sclerosis (Pennington, in print; Moore & Pennington, 2021), cerebral palsy (Law & Pennington, 2021; Nelson, Fuchs, Pennington, & Pennington, 2020), Marfan Syndrome (Webb & Pennington, 2019), attention deficit disorder (Cummings, Ayisire, Pusch, & Pennington, 2020), hemophilia (McDonald, Wind, & Pennington, 2021), autism (Gordon & Pennington, in print), and amputation (Kelly & Pennington, 2021). The causes of a physical disability vary; they can be hereditary or either acquired. Hereditary disability is where a person has been born with a physical disability or developed one due to inherited genetic problems, has suffered an injury at birth, or has issues with

their muscles. Acquired disability is due to an accident, infection or disease, or as a side effect of a medical condition.

2. What is Amputation?

Amputation is a removal of a limb by trauma, medical illness, or surgery (Bhuvanewar, Epstein, & Stern, 2007). It is used to control pain or a disease process in the affected limb, such as malignancy or gangrene. In some cases, it is performed as a preventive surgery for such problems. The disease tissue is removed and any crushed bones. The uneven areas are smoothed and seal off the blood vessels and nerves. The muscles are cut and shaped so that the stump, or end of the limb, will be able to have an artificial limb (prosthesis) attached to it. Causes of an amputation are diseases, such as blood vessel disease (peripheral vascular disease) diabetes, blood clots, or osteomyelitis which is an infection in the bones, and injuries (especially of the arms). The pain is often described as aching, throbbing, shooting, cramping, or burning. Nonpainful sensations may include feelings of numbness, itching, parenthesis, pressure or even the perception of involuntary muscle movements in the residual limb at the amputation site.

Amputation can be avoided by eating a healthy diet of lean meats, fruits and vegetables, fiber and whole grains avoiding sugar sweetened juice and soda reducing stress, exercising at least sixty minutes a day. An amputation can affect mobility and dexterity. The main effect of a lower limb amputation is a reduction of that person's mobility meaning that they will not be able to walk as they did pre-injury or surgery. In the majority of cases after sufficient care and rehabilitation, the injured person will be able to make use of a prosthetic limb. If a person refuses to amputate, the lack of blood circulation will cause the pain to increase. Tissue will die due to lack of oxygen and nutrients, which leads to infection and gangrene. Patients with renal disease, increased age and peripheral arterial disease have exhibited overall higher mortality rates after amputation; demonstrating that patient's health status heavily influences their outcome. Furthermore, cardiovascular disease is the major cause of death in these individuals. There are many types of amputations: leg, digits, partial foot amputation (trans metatarsal), below knee amputation (transtibial), ankle disarticulation (Syme), arm, above knee amputation (transfemoral), and elbow disarticulation to name a few.

3. Kickball

Kickball is a game that was invented in the United States in the early half of the twentieth century, containing elements of soccer and softball/baseball. It was originally used as a game to introduce school children to baseball in United States public schools that originally popularized it as a sport. First known as Kick Baseball, kickball is primarily a game that is played by children and young people, and is still a particularly popular activity in the United States, South Korea where it is known as Foot Baseball (Balyagu), Japan where it is called QuickBase, and Canada where schoolchildren call it California Kickball or Soccer Baseball.

Kickball is mainly played in schools and in afterschool programs. It is a fun game that can be played by people of all ages. The object of the game is for one team to score runs than the other, thus winning the game. When not kicking, the opposing team attempts to prevent the opposite players from scoring runs and get the out by catching the ball or being forced out a base for example. Kickball is an easy and effective introduction to baseball for youngsters. Any number of people can play the game but usually it is played with teams numbering from 5 and 15 with the World Kickball Association recommending that teams should number between 8 and 11. It can be played on any surface as long as it has four bases in a diamond shape, 20 feet apart if abiding by World Adult Kickball Association Rules or as deemed appropriate if you have limited space. The pitching or rolling as some would say, should be straight in front of the home plate and should also

be in line with the first and third bases, and a boundary should be clearly marked. The ball is the only other essential piece of equipment and is usually made of inflated rubber and between 8 and 16 inches in circumference. Scoring in the game of kickball is very simple. A run is scored when a runner safely reaches the home plate before the end of an inning. If the ball is kicked and clears the outfield boundary, the runner that kicked the ball (and any other of their teammates that are already on the bases) can run unopposed to the Homeplate scoring a run each.

In order to win the game, each team has had their allotted number of innings, the team with the greater number of runs is declared the winner. In the case of a tied game, World Adult Kickball Association state that an accuracy kick competition can be used to determine the winner. This involves one designated kicker from each team kicking towards second base from the home plate. The kicker who kicks the ball closest to the base wins the game for their team.

3.1. Player Positions

- Pitcher – on the pitching rubber
- Catcher – behind home plate
- 1st Baseman – a few feet away from 1st base
- 2nd Baseman – a few feet away from 2nd base toward 1st
- 3rd Baseman – a few feet away from 3rd base
- Shortstop – between 2nd and 3rd base
- Leftfielder – outfield behind 2nd and 3rd base
- Centerfielder – outfield behind 2nd base
- Rightfielder – outfield behind 1st and 2nd base

The pitcher's mound is where the person that will be rolling the ball (ramp) would be. The chaser line is where the person run and chasing cannot be pass when running to base. And the kicking zone is the area where the person kicking the ball can be while preparing to kick the ball.

4. Modified Kickball for Persons with and Amputation

This version of the classic playground game utilizes low-tech adapted equipment and modified rules. Suggested game variations are provided for different populations of student ability. The skills worked on within this activity are directly related to the National Association for Sport and Physical Education National Standards, the Perkins School for the Blind Adapted Physical Education Curriculum and components of the Expanded Core Curriculum.

4.1.1. Materials

- Ball ramp: can be made of cardboard
- Electric ball launcher
- Activation switch
- Playground ball (preferably a bright color for contrast on ramp)
- Four poly spots for bases which should be different colors plus large cones or something that will elevate the ramp and that will be point of reference as to where the bases are placed
- Small cone to use as kicking tee

The ramp is set up in the center of the diamond at the pitcher's mound. The only thing that is different on the ramp that I made is that it doesn't have anything electrical because my student used his shoulder to rolled the ball down the ramp when myself or another student put the ball on the ramp for him.

Divide class into two teams, a fielding team and a kicking team. On the fielding team, everyone takes a turn pitching. Students who are able can roll the ball by bending their knees, squatting and rolling the ball between their legs or from the side. Students that need to can use the ramp and/or ball launcher. Once the ball is kicked the runner advances to each base, represented by a cone and different colored poly spot, while the fielding team fields the ball.

4.1.2. Playing the Game

There are three ways for the fielding team to get a runner out; choose one based on the ability of the players involved.

- Fielder brings the ball to the base and touches it before the runner gets there,
- Fielding team passes the ball to every defensive player before the runner touches all three bases and makes it home.
- Fielder holds the ball above his or her head before the runner gets on base (this option is for students with no vision; play is similar to Beep Baseball (see Pennington & Shiver, 2017).

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4.1.3. Variations

- Students in a wheelchair may roll the ball down the ramp.
- Students with limited movement ability may utilize an activation switch and electric ball launcher.
- Students with limited lower extremity movement may utilize a ball on a kicking tee.
- A student with no lower extremities can hit the ball with upper extremities can use the to hit the ball as it is rolled and another student can run for them.

5. Conclusions

The game of Kickball has many variations. A main goal should be to make sure that all students feel that they are a part of the class – not simply relegated to score keeper or ‘referee’. An amputation as a child can be very discouraging, but to know that you can participate in the fun with friends and peers will make the activity rewarding and valuable. When the game is being played and is completed the students should always use good sportsmanship – have students say, “good game” and give a little shimmy (a little shake of the body) in place of a high five [for students with upper-extremities impairments].

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