The Effects of Compression on a Fastpitch Softball

What happens when you hit a softball with a bat? How is the ball affected? How does the ball react when it bounces off the grand? When a ball is hit the core compresses. How does this compression effect the reaction of the ball? Compression is an everyday reaction that could make a huge difference in the performance of your game. I play fastpitch softball and I’m very curious to find out how the compression affects the game. Little things can make a big difference and I’d like to find out how I can better improve not only my game but the game of other players around the world.

Compression is an outward force working against an object to push it in and make it smaller. When put under stress, every material will suffer some compression. This may cause deformation or damage. The deformation may be permanent. It also may be reversed when the compression forces disappear (DeWolf, 1992). A softball compresses and decompresses when hit with a bat and this affects the distance it will travel and reaction of the ball.

A standard fastpitch softball has a 12 inch circumference. It typically weighs 7.0 oz. It has a yellow leather covering sewn together creating the laces. The core of a standard fastpitch softball is made of a mixture of cork and rubber. Although it is less common a softball core may also be made of a polyurethane mixture or kapok fibers, a tropical tree that can be found in the caribbean (Werner, 2006).

Cork is an impermeable, buoyant bark tissue but, when grinded up into small chunks water is allowed to pass through and absorb into the cork. Rubber is the latex sap that is collected from a rubber tree. When mixed together the two create a bouncy almost hard substance similar to flexible plastic. The materials found in the core compresses in and then bounces back when
hit, causing the ball to react and travel certain distances when hit. As time goes on the cork deforms when compressed and will eventually stop returning to its original shape. This will affect the reaction of the ball and cause the reaction to be different for each player coming into contact with the ball.

When a softball is wet or “waterlogged” the water adds additional weight to the ball. This will make it harder for the ball to bound off the bat and travel as far. The water also soaks into the cork center of the ball, causing the core to be less dense and as a result this will make the core easier to compress. When a softball is deformed it will bounce off the bat at odd angles and affect how the ball reacts on the ground as well. It is impossible to fix the deformation of a ball and it takes large amounts of time to fully dry a softball. Because of this the softball will need to be replaced to keep the reaction of the ball consistent for each player.

Compression is an outward force working to make an object smaller. Compression is a large factor in the game of softball. The cork and rubber core is greatly affected by the action and reaction of compression. Deformation of the ball will affect this reaction and make the game less consistent. When waterlogged the ball is heavier and this makes it more difficult to hit the ball as far. Water also expands the center and makes it easier to deform, negatively affecting the reaction of the ball. I hypothesise that if a softball is hit multiple times it will compress the core of the ball and negatively affect the reaction of the ball making the reaction less consistent. I plan to test how often a softball should be replaced during a game to keep the reaction of the ball consistent throughout the course of the game. I hope that my research will help the US softball team and any other fastpitch teams around the world and make a difference in the accuracy of the game.
Works Cited


