

Judging Faults under GC Rules 13 (a)(6) and 13 (a)(8) when Balls are in Very Close Proximity.

A weakness in Rules 13 (a)(6) and 13 (a)(8) is that there is nothing in the Rule, nor a Commentary on the Rule stating at what distances balls need to be apart, nor at what angle to the line of centres of the balls the striker's ball needs to be struck before a fault under the above rules will or will not occur. Therefore the matter becomes one of personal judgment by the individual referee and I believe some guidelines are needed to help referees consistently make decisions as accurately as possible without unnecessarily penalising the striker.

For obvious reasons referees cannot physically measure the separation of balls during the course of a game. However by practising with two balls placed at known distances apart, say 2 – 4mm and string lines to delineate the angle of the stroke to be made on the striker's ball in relation to the line of centres of the balls, it does not take long to understand what happens when a stroke is played if the balls are very close to each other.

When a stroke is going to be played with the balls being very close together, it is a matter for the referee to carefully watch the stroke and its consequences, taking into account the following:

1. The strength with which the stroke is played. (Softly or forcefully.)
2. The manner in which the stroke is played. (With follow through or as a "stun" shot.)
3. The angle of the stroke on the striker's ball in relation to the line of centres of the two balls.
4. The distance the striker's ball travels relative to the other ball.
5. The angle of the mallet shaft to the vertical at the moment of contact with the striker's ball.

These 5 variables are explained in detail in the ACA Golf Croquet Manual and an understanding of them is vital if a referee is going to make accurate decisions. (Note: The Manual is currently being revised by Owen Edwards and myself.)

In the past Prof. Stan Hall has shown that if a stroke is played softly the ball stays in contact with the mallet for about 1 – 2 mm and if played forcefully for about 3 – 4mm.

Recently David Harrison, from Kew CC in Victoria, has shown when balls are 2mm apart and the striker's ball is struck at an angle of 78° to the line of centres of the balls the tangential distance between the balls is 19mm. This means that when a stroke is played at this angle the striker's ball will travel about 15mm before contact with the other ball and as it will lose minimal momentum from the slight contact on the other ball, the mallet will not have time to catch up with it to cause a "double tap" [Rule 13(a)(6)]. Also, as the mallet has lost contact with the striker's ball a "ball crush" [Rule 13 (a)(8)] will not happen.

Using simple, but accurate, geometrical drawings the situation is the same for strokes played at even sharper angles to the line of centres.

Using the Carbon Paper Impact Test (for details of this test refer to the ACA GC Referee Manual Section GC B6) I am currently trying to devise a **simple** way of demonstrating the validity or otherwise of a stroke when another ball is in very close proximity.

These tests are being performed on balls that are as close to 2mm apart as I can set them using a feeler gauge, with the striker's ball being struck at angles ranging from 10° - 80° to the line of centres of the balls.

The study is not yet complete but the early results have shown that soft and hard strokes, played with follow through at angles between 45° to 80° to the line of centres of the balls and with the mallet handle vertical to the ground have all been **clean**.

At 20° both soft and hard strokes, played with follow through, resulted in “double taps” [Rule 13 (a)(6) fault] or “ball crushes” [Rule 13 (a)(8) fault].

I am yet to perform the tests with similar strokes played at less than 20° and between 20° and 45°.

As well I will be conducting tests using soft and hard “stun” strokes as well as repeating all of the tests with the mallet handle tilted forward.

I expect to have the results of all testing in the near future. Hopefully in time for the next edition of Croquet Australia.



Photos above show the string lines, angles, mallet with carbon papers attached and ball set up used for the tests.

Reading clockwise the string lines are set at 0°, 60°, 70°, 80° and 90°

My findings so far are making it more obvious to me that we, as referees, have probably been too harsh on players in the past and need to allow the striker a larger angle in which the stroke may be played when it is very close to another ball, before a fault under Rule 13 (a)(6) or Rule 13 (a)(8) is called.

Although the likelihood of a fault increases when balls are in very close proximity a fault is **not always** going to be committed. If this was the case the game as we know it at present would be almost unplayable, especially for the more skillful players.

Finally if there is any doubt in the referee’s mind when deciding on the validity of a stroke, the benefit of that doubt is to be given to the striker.