Warm up practices of golfers: are they adequate?

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Abstract

Background—Although it is widely recommended that golfers warm up before play or practice to enhance their physical performance and reduce their injury risk, it is not known to what extent they actually undertake such warm up procedures.

Objective—To collect information about the proportion of golfers who actively warm up and to determine the types of warm up behaviours.

Methods—This study was conducted over three weeks at three different golfing venues: a private golf course, a public golf course, and a golf driving range. Golfers' warm up behaviours, defined as any form of preparative exercise, were recorded by direct observation by two independent observers.

Results—the sample consisted of 1040 amateur golfers (852 men and 188 women) aged at least 18 years. Only 54.3% (95% confidence interval 49.8 to 58.8) performed some form of warm up activity. Air swings on the tee were the most commonly observed warm up activity, with 88.7% (95% confidence interval 85.9 to 91.5) of golfers who warmed up performing these.

Conclusions—Only a small proportion of amateur golfers perform appropriate warm up exercises. To improve on this, golfers should be educated about the possible benefits of warming up and be shown how to perform an appropriate warm up routine.

Keywords: behaviour; observational study; golf; warm up; injury prevention

Warm up is defined as a period of preparatory exercise undertaken to enhance subsequent competition or training performance.3 It is generally believed that preparing the body before play benefits performance and decreases the risk of injury.1 2 4 However, the recommendations for appropriate warm up practices in the golfing literature have been inconsistent.1 An appropriate warm up for golfers should include a period of aerobic exercise to increase body temperature, followed by stretching of the “golf muscles” (hands, wrists, forearms, shoulders, lower back, chest, trunk, hamstrings, and groin).1 5–13 A series of golf swings with a progressive increase in range of motion and vigor should then be performed.1 4 5–13

To date, no golf specific studies have investigated the benefits of warming up. Also, there have been no studies that describe the types of warm up activities that are undertaken, the extent to which these are undertaken, or which types of golfer actually do warm up.7 Before strategies to encourage and educate golfers to warm up can be implemented, it is important to understand current warm up behaviours.2

The purpose of this study was therefore to collect information about the proportion of golfers that warm up and to determine the types of warm up they undertake.

Method

The warm up behaviours of amateur golfers aged 18 years and over were observed at three different golfing venues: a private golf course, a public golf course, and a golf driving range. Observational data was collected over three weeks in June 1999 with each venue randomly visited 10 times. During each three hour session, two independent observers recorded the warm up behaviours of golfers.

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Table 1 Number of golfers observed undertaking each type of warm up activity (n=1040)

<table>
<thead>
<tr>
<th>Warm up activity</th>
<th>Number of golfers who performed a warm up activity (n=1040)</th>
<th>% of observed golfers who performed each warm up activity (n=1040) (95% CI)</th>
<th>Average number of repetitions by those who performed each activity (n=565)</th>
<th>Median</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air swing on tee</td>
<td>501</td>
<td>48.2 (43.8 to 52.6)</td>
<td>88.7 (85.9 to 91.5)</td>
<td>2.0</td>
<td>0–12</td>
</tr>
<tr>
<td>Air swing before tee</td>
<td>199</td>
<td>19.1 (13.6 to 24.6)</td>
<td>35.2 (28.8 to 41.6)</td>
<td>1.0</td>
<td>0–8</td>
</tr>
<tr>
<td>Dynamic stretch</td>
<td>97</td>
<td>9.3 (3.5 to 15.1)</td>
<td>17.2 (9.7 to 24.7)</td>
<td>1.0</td>
<td>0–3</td>
</tr>
<tr>
<td>Static stretch</td>
<td>31</td>
<td>2.9 (0.0 to 8.8)</td>
<td>5.4 (0.0 to 12.0)</td>
<td>1.0</td>
<td>0–2</td>
</tr>
<tr>
<td>Aerobic activity</td>
<td>0</td>
<td>0.0 (0.0 to 0.0)</td>
<td>0.0 (0.0 to 0.0)</td>
<td>0.0</td>
<td>0–0</td>
</tr>
</tbody>
</table>

A total of 1040 golfers were observed, with most being men (81.9% of the total, 95% confidence interval 79.4 to 84.4%).

Table 1 shows that 54.3% (n = 565) of the golfers who performed some form of warm up. Of the golfers who were observed to warm up, most undertook air swings on the tee, followed by static stretches before the tee. No golfer undertook aerobic activity and very few performed static stretches. Only three muscle groups were observed to be dynamically stretched, with the shoulder being stretched most often (73.2% of all golfers who stretched dynamically). The two other muscle groups stretched were the trunk (21.3%) and lower back (5.5%). Only three muscle groups were observed to be statically stretched: the shoulder (73.7% of all golfers who stretched statically), the wrist (21.1%), and the hamstrings (5.2%).

Most golfers who warmed up performed only one type of activity (77.0%). Only 17.8% of golfers performed two different warm up activities, and even fewer (0.4%) performed all four warm up activities.

Few golfers were observed performing multiple repetitions of each warm up activity (Table 1). On average, golfers performed more than one air swing off the tee (median 2 repetitions).

In all other warm up activities the median number of repetitions was one.

### Discussion

This study presents information about the warm up activities of a sample of observed amateur golfers. Almost half of the golfers in our sample did not perform any warm up before play or practice. Those who undertook some form of warm up were more likely to perform air swings than stretches or aerobic exercises. This limited warm up activity is unlikely to be adequate to achieve either performance or injury prevention benefits. Air swings are an important activity to perform, but they do not constitute an appropriate warm up routine by themselves. Although the stretches performed targeted one of the main golfing muscle groups (the shoulder), the other major muscle groups were generally neglected. Fewer than 3% of golfers in our sample can be considered to have warmed up adequately. These golfers performed at least one set of stretches and air swings—that is, they performed at least three different warm up activities.

As this is an observational study, there are some limitations in the data presented. It is possible that the golfers who did not warm up on the day of the observation usually do so, but not on that day. Furthermore, it is possible that some golfers performed a warm up out of view of the observers—for example, in the car park. Further studies are needed to determine the extent to which golfers also warm up before reaching the tee off area.

If golfers do not perform an adequate warm up routine as this study suggests, they may place themselves at risk of injury. Although there is a lack of scientific evidence to link warming up to reduced injury risk, many authors believe a properly conducted warm up procedure reduces the chance of injury during golf. However, as the benefits of golf warm up procedures have not been formally studied, the current recommendations for such activities are inconsistent.

In conclusion, this study provides information about the extent and type of warm up practices undertaken by golfers. Future research should be directed towards developing an appropriate golfing warm up routine and formally evaluating its injury prevention and performance benefits. In addition, information on golfers’ knowledge about and attitudes towards warming up need to be determined. With this information, strategies to educate golfers about the benefits of warming up and how to perform an adequate warm up procedure will be able to be developed and promoted.

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Take home message
Few amateur golfers perform appropriate warm up routines before play or practice. Education of amateur golfers about the possible benefits of warming up and how to perform an appropriate warm up procedure needs to be implemented.

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<td>New stock to order</td>
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<td>With small motif. State colour and chest size required.</td>
<td>£23 + £3 p&amp;p</td>
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