Injury Patterns among Turkish Archers

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INTRODUCTION

To understand the injury patterns in archery, it is necessary to review the normal shooting patterns that are involved. As the archer starts to draw the string back, the drawing arm is held at 90° or greater abduction and the shoulder is flexed across the body. During drawing phase the arm maintains 90° or greater abduction as the arm unit extends across the body towards full draw. This action is referred to as horizontal extension (Pappas et al., 1985) and probably contributes to the shoulder injuries observed.

Full draw is maintained for several seconds while the archer aims and then releases the string. Universally, in archery, this weight is measured in pounds (lb) (Mann, 1989).

In Mann and Little's (1989) study 21 elite archers were studied and their shoulder injuries were documented; the injuries were correlated to anatomical dissections. Injuries to the drawing arm shoulder in female archers were found to be the most prevalent type of injury. It was suggested that factors involved included lack of specific rotator cuff training, coupled with overtraining and inappropriate technique (Mann, 1994).

The purpose of present study was to identify the injury patterns that are seen among Turkish Archers.

METHODOLOGY

Sample
88 archers (25 male, 13 female, 27 junior male, 23 junior female) who have taken part the Turkish Archery Championship (age: 12 - 48, x: 23.852 ± 5.719, height: 160 - 195 cm, x: 175.053 ± 8.986, body weight: 46 – 94, x: 66.013 ± 11.852, training age: 1 – 27, x: 5.060 ± 4.005) participated in this study (Table 1).

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
<th>Junior Male</th>
<th>Junior Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>25</td>
<td>13</td>
<td>27</td>
<td>23</td>
<td>88</td>
</tr>
<tr>
<td>Age</td>
<td>28 ± 3.5</td>
<td>26.5 ± 5.2</td>
<td>16.7 ± 2.5</td>
<td>16.2 ± 2.8</td>
<td>23.8 ± 5.7</td>
</tr>
<tr>
<td>Height</td>
<td>182.5 ± 12.2</td>
<td>168.3 ± 15.7</td>
<td>179.2 ± 5.81</td>
<td>171.4 ± 6.2</td>
<td>175.0 ± 8.9</td>
</tr>
<tr>
<td>Body Weight</td>
<td>84.2 ± 13.7</td>
<td>72.4 ± 11.4</td>
<td>53.4 ± 10.8</td>
<td>55.3 ± 5.2</td>
<td>66.0 ± 11.8</td>
</tr>
<tr>
<td>Training Age</td>
<td>9</td>
<td>7</td>
<td>0.9</td>
<td>0.7</td>
<td>5.0 ± 4.0</td>
</tr>
</tbody>
</table>

Table 1: The number, age, height, body weight, and training years of subjects.

RESULTS

Data collection Instrument and Procedure
The prepared questionnaire was applied during the 2000 Turkish Archery Championship. There were descriptive questions in the questionnaire to gather information about the general characteristics (gender, age, height, body weight, and training years) of the sample. Besides these, there were questions about training sessions, the number of arrows shot in a session, and the drawing weight in the questionnaire. The questionnaire was distributed to the archers during the competition in appropriate breaks in order not to distract competitors. The questionnaire was the only source of information on injuries; there was no other instrument or clinical application in this study.

RESULTS

The purpose of present study was to identify the injury patterns that are seen among Turkish Archers.

DISCUSSION

It can be deduced that the most prevalent injury pattern is blisters on fingers. This may be caused by drawing weight of the bow, and the number of arrows that are shot in a single session. The thickness of the bowstring is a high load on these three fingers. Blisters are encountered due to excessive shooting and are managed in the usual way. Mann (1994) advised that the solution is assuming proper hand position on the string, adding spacers between the fingers, using a longer bow and adding extra padding to the prospective tab.

The second most pervasive type of injury was “Drawing - arm shoulder” injuries. This result is supported by Mann and Little (1989). Archery places asymmetrical stress on the shoulder structures especially on the Drawing - arm shoulder. On the average, two - thirds of the injuries occur on the different parts of the drawing arm. Thus, archers should pay more attention to the drawing – arm by doing warming-up and cooling down exercises before and after practice.

The high percentage of 10.66 for string touches stems from the sample. In the present study not all the archers were elite. Almost half of them were novice archers. Thus, they may tend to have more string touches than elite archers because their arming technique in the bow arm and releasing technique in the drawing arm may not be suitable for arrow release. Incorrect release movement may cause lateral deflection on the string toward the bow handle.

Archers should be very careful about injuries like all other sportmen. They have to pay attention especially to drawing - arm. Before injury; (1) they should do warm-up and stretching exercises before training session, (2) they should include strengthening weight-training programs, (3) and finally they should be careful about drawing weight of the bow and the number of arrow shot in a single session. During the injury, they should follow scientific instructions given by specialists. After injury period, the duration of any session and the intensity of training should be low.

REFERENCES

- Fédération Internationale De tir a L’arc (FITA) (1996). Constitutions and Rules, Avenue de COUR 135, 1007 Lausanne, SWITZERLAND
- International Society of Biomechanics in Sports, Proceedings. Symposium V, Athens, Greece
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Table 2: General characteristics of archery training methods.

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std.</th>
<th>Min.</th>
<th>Max.</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training Sessions They have in a week</td>
<td>4.453</td>
<td>1.662</td>
<td>1</td>
<td>7</td>
<td>88</td>
</tr>
<tr>
<td>The Duration of a training session (hr)</td>
<td>2.763</td>
<td>0.826</td>
<td>1.5</td>
<td>5</td>
<td>88</td>
</tr>
<tr>
<td>Number of Arrows Shot in Session</td>
<td>168.45</td>
<td>60.58</td>
<td>50</td>
<td>300</td>
<td>88</td>
</tr>
<tr>
<td>Bow weight in kg</td>
<td>18.063</td>
<td>2.719</td>
<td>12</td>
<td>26</td>
<td>88</td>
</tr>
</tbody>
</table>

Table 3: The parts of body that injured during the last two years.

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