THE EFFECTS OF STRIDE LENGTHS ON ACCURACY AND NON-ACCURACY THROWING PARAMETERS IN TEAM HANDBALL

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INTRODUCTION
Throwing accuracy and throwing velocity in handball are regarded as basic parameters of performance during competition. Several investigators have studied the relationship between the velocity of movement of the upper limb and accuracy in hitting target [1,2] and throwing on the spot or jump shot performance in handball [3]. The aim of the present study was to determine the effects of last three stride lengths on accuracy and non-accuracy throwing performance.

METHODS
Two groups of subjects took part in the experiments: One group of 9 handball players, Turkish Handball National Team (age 25.44±3.28 yrs), another group of 9 handball players, the best of 9 handball players, Turkish Handball National Team (age 22.66±1.58 yrs), another group of 9 handball players, the best

RESULT AND DISCUSSION

Figure 1. Last three stride phases (L1: last stride length, L2: second last stride length, L3: third last stride length) Total 36 handball throwing (Group I: 11 accuracy throwing, 7 non-accuracy throwing; Group II: 6 accuracy throwing, 12 non-accuracy throwing) performances were recorded. The identity of stride lengths were presented in Figure 1. There were significant differences between ball velocity and stride lengths among

Table 2. The relationship between the last three stride lengths and throwing parameters in accuracy over arm throwing (See Table 1).

<table>
<thead>
<tr>
<th>Accuracy throwing</th>
<th>Non-accuracy throwing</th>
</tr>
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<tbody>
<tr>
<td>L1 (% height) (cm)</td>
<td>Ball velocity (m/sec)</td>
</tr>
<tr>
<td>p</td>
<td>r</td>
</tr>
<tr>
<td>Group I (n=11)</td>
<td>16.45±5.78</td>
</tr>
<tr>
<td>Group II (n=6)</td>
<td>23.54±6.74</td>
</tr>
<tr>
<td>p</td>
<td>.015*</td>
</tr>
</tbody>
</table>

The relationship between the last three stride lengths and some throwing parameters were showed that Table 2. (C: cocking phase, A: acceleration phase, R: ball release phase)

CONCLUSION
Stride length parameters are effective on over arm throwing parameters. There was a positive relationship between L1 (% height) and elbow flexion angle at accuracy throwing and upper trunk angular velocity in arm cocking phase at non-accuracy throwing. The trunk movement may play a role through transfer of angular momentum which should be indicated by any relationship between throwing speed and trunk movement parameters [4]. Both ball velocity and upper trunk angular velocity in cocking phase were found bigger at Group II than Group I. But, when the ball velocity increases, accuracy is decreased [4]. In this study, Group II performed faster ball velocity and less accuracy throwing. In accuracy throwing, between last stride length and shoulder internal rotation angle in acceleration phase was found negative relationship.

REFERENCES