THE DELTOID ABDUCTION STRENGTH IS A DETERMINANT FACTOR IN FEMALE PISTOL SHOOTING

Daniel Mon (1)

1. Facultad de Ciencias de la Actividad Física y del Deporte – INEF, Universidad Politécnica de Madrid. Spain

Introduction
The strength is commonly accepted as a factor which influences the performance in most of the sports. However there are not too many studies that analyze the relation between the strength and the performance in pistol. Some authors are pointing to the way that the strength should be trained. They think that the mixed force-endurance qualities should be preferably training. Some studies showed that specific training force programs improve the performance and the pointing ability during the general and precompetitive periods. The general strength and the specific abdominal, lumbar and legs force are related by others authors as factors which affect the performance in the shooting sport. The abduction deltoid strength is related to the vertical movements of the barrel of the pistol, being a differential element between sport shooters level.[1]

Methods
23 female pistol shooters participated in this study. The data collection with a strength test (figure 1) was obtained during a Spanish air pistol Championship. The following variables were analyzed: deltoid abduction strength, deltoid abduction strength relative to body mass index (BMI), deltoid abduction strength relative to body weight and performance. Linear regression was used to know the strength variables which determine the performance. The performance was measured by the ISSF rules and regulations by the Spanish referees.

Results
Our results (table 1) showed that both, deltoid abduction strength relative to BMI ($F_{1,21}=6.89; p<0.05$) and deltoid abduction strength relative to body weight ($F_{1,21}=6.16; p<0.05$) were related to the performance with this values: $r^2_{corrected}=0.21$ and $r^2_{corrected}=0.19$ respectively.

<table>
<thead>
<tr>
<th>Variable</th>
<th>$r$</th>
<th>$r^2_{corrected}$</th>
<th>Sig</th>
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</thead>
<tbody>
<tr>
<td>F_{bmi}</td>
<td>0.50</td>
<td>0.21</td>
<td>*</td>
</tr>
<tr>
<td>F_{wght}</td>
<td>0.48</td>
<td>0.19</td>
<td>*</td>
</tr>
</tbody>
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Table 1: Relation values between performance and strength. F_{bmi}: Deltoid abduction strength relative to body mass index; F_{wght}: Deltoid abduction strength relative to body weight; Significance: * $p<0.05$.

Discussion
The pistol stability is a factor closely related to the performance in the bibliography. However, very few studies have determined the strength influence on pistol performance. Big relations were found in pistol modalities with time limitation, $r=0.82$-0.89. [2]. Oppositely to these results, our data revealed small relations between performance and the deltoid strength, probably due to the possible differences in the pistol modalities analyzed in both studies. These data are in concordance with Mon, D., et al.[3]

References

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