BALANCE, VERTICAL JUMP AND SPEED OF THE FIRST STEP OF A SPRINT IN YOUNG PLAYERS

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Introduction
In football, the players often have to express strength in conditions of disequilibrium with notable speed of movement. For example sprints on a wet field with an opponent in contrast or a jump followed by a sprint on a muddy field. Some studies indicate the presence of a correlation between the balance capacity and strength (2, 3). In particular, Cronin and Hansen (1) found a correlation between a counter-movement vertical jump and the various forms of speed, including the speed of the first step of a sprint of 5 metres.

Purpose
The aim of this study was to examine the relationship between the strength expressed in the conditions of monopodal position, monopodal balance capacity and speed of the first step of a sprint in young players.

Subjects, material and methods
35 male subjects, all playing football at an amateur level and all between the age of 8 and 10 years (mean 9 ± 1) were tested. The optoelectric system (Optojump, Microgate, Bolzano, Italy) was used to assess the strength of the lower limbs, through a counter movement jump test parting from monopodal position with the arm swing performed with right limb (CMJbD) and left limb (CMJbS); and the speed of the first step of a 5 metre sprint after leaving a visual signal with the left (VPPS) and right limb (VPPD). The monopodal balance capacity (left = LPFS; right = LPFD) was assessed using Libra (Easytech, Prato, Italy). The subjects tested had to remain in equilibrium on a tilting balance-board for 30 seconds for each test, for a total of 3 valid tests. The repeatability of tests was verified by Test-re-test. The correlation was studied using the Pearson correlation coefficient using the SPSS v.17 software.

Results and Discussion
The results are summarized in Table 1. A low correlation was found between the balance capacity with the right rather than the left limb (P = 0.165), while the correlation index between the capacity of monopodal vertical jump was significant (R = 0.755 **) as was the speed of the first step of the sprint performed with the left limb rather than the right (R = 0.830 **)

<table>
<thead>
<tr>
<th>Age</th>
<th>Balance (a.u.)</th>
<th>Vertical Jump (cm)</th>
<th>Speed of first step (s)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LPFS</td>
<td>CMJbS</td>
<td>CMJbD</td>
</tr>
<tr>
<td></td>
<td>VPPS</td>
<td>VPPD</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>6.5±0.6</td>
<td>12.3±1.2</td>
<td>12.6±0.8</td>
</tr>
<tr>
<td>9</td>
<td>6.5±1.0</td>
<td>11.9±0.7</td>
<td>12.3±0.6</td>
</tr>
<tr>
<td>10</td>
<td>7.9±1.2</td>
<td>12.6±1.0</td>
<td>13.1±1.2</td>
</tr>
<tr>
<td>9±1</td>
<td>6.9±0.6</td>
<td>12.2±0.5**</td>
<td>12.6±0.5**</td>
</tr>
</tbody>
</table>

R= 0.165  R= 0.755**  R= 0.830**

Table 1. Average of the results of the three capacities tested according to the three age groups. ** significant correlation between CMJbS and CMJbD and between VPPS and VPPD

Conclusions
The study of the speed of the first step of a sprint needs further testing. However, it is advisable to perform workouts of balance training to achieve better balance capacity particularly in monopodal conditions, guaranteeing prevention of ankle and knee injuries, and also in case of rehabilitate the athlete after injuries.

As for monopodal vertical jump capacity, as an act strongly characterized by coordinative factors training for young players in some coordinative exercises is to be recommended.

References