FUNCTIONAL SOCCER-SPECYFYCIC EXERCISES
ON UNEVEN GROUND

Influence on Dynamic Stability of Lower Limbs and Knee in Correlation with Shot on Target Precision in Case of Young Soccer Players

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## Author’s affiliation and conflicts of interest

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OBJECTIVE

TO EVALUATE OVERALL STABILITY OF YOUNG SOCCER PLAYERS UNDER DYNAMIC CONDITIONS

RESULTS ON THE PITCH

SHOOTING AND PASSING PRECISION

TO SEE HOW IT AFFECTS...
13 players from BE A STAR FOOTBALL ACADEMY in Warsaw (year 2004)

16 players from BE A STAR FOOTBALL ACADEMY in Warsaw (year 2004)

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<tr>
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<th>Age [years]</th>
<th>Height [cm]</th>
<th>Weight [kg]</th>
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<td>Study group (n=13)</td>
<td>14 ± 0</td>
<td>163,6 ± 4,1</td>
<td>53,8 ± 3,3</td>
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<td>Control group (n=16)</td>
<td>14 ± 0</td>
<td>159,9 ± 5,3</td>
<td>51,5 ± 7,1</td>
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METHODS - TESTING

DYNAMIC STABILOGRAPHY

- Biodex Balance System
  - Stability index in the medial/lateral plane (M/L)
  - The overall stability index (OSI)
  - Stability index in the anterior/posterior plane (A/P)

SHOOTING PRECISION TESTS ON THE PITCH

- 11-METER SOCCER SHOOTING TEST
- LOUGHBOROUGH SOCCER SHOOTING TEST
FUNCTIONAL TRAINING PROTOCOL

15 MIN
30 MIN
2 TRAINING SESSIONS

12 WEEKS

DYNAMIC STRETCHING

CORE STABILITY EXERCISES

15 MIN
30 MIN

2 TRAINING SESSIONS

45 MIN

- 15 min of warm-up (dynamic stretching + core stability exercises)
- 30 min of exercises on unstable ground
FUNCTIONAL TRAINING PROTOCOL

Specifically designed: exercises on unstable ground (using a special sensomotoric cushion) combined with soccer-specific exercises with a ball.
RESULTS

- Significant statistical **improvement** of stability parameters expressed by the overall stability index (OSI) and A/P stability index in case of the *supporting limb*
- No significant differences were recorded for control group’s results

*Figure 1 and 2. The average OSI stability scores and A/P stability scores, including the standard deviation between the results from before and after the stabilisation and proprioception training. The chart includes the statistical significance threshold (Wilcoxon Test)*
The players’ stability tests results are statistically lower than the control group’s data *(the players had better stability in comparison to the control group)*

**RESULTS**

Figure 3 and 4. The comparison of mean values of the OSI and A/P indexes including the standard deviation and statistically significant differences between the results of the study and the control group before and after preparatory period. The chart includes the statistical significance threshold (U Man-Whitney Test)
A statistically significant improvement of shot’s precision was observed within the study group (for both shooting precision tests).

No significant differences were recorded for control group’s results.

Figure 5 and 6. The average 11-meters Test’s and Loughborough Test’s scores, including the standard deviation between the results from before and after the stabilisation and proprioception training. The chart includes the statistical significance threshold (Wilcoxon Test).
The players’ shooting precision tests results are statistically higher than the control group’s data *(the players had better precision in comparison to the control group)*

Figure 7 and 8. The comparison of mean values of 11-meters Test and Loughborough Test including the standard deviation and statistically significant differences between the results of the study and the control group before and after preparatory period. The chart includes the statistical significance threshold (U Man-Whitney Test)
Obtained results encourage to design new study, further exploring observed codependencies and whether there is an actual relationship between the dynamic stability and soccer achievements.

