

## Training Methodology for Young Athletes

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### **Abstract**

*Previous research has evaluated the training effect of soccer, in adolescence on postural control through the use of a strong platform for the detection of the Center of pressure (COP); this research, however, showed only how soccer. Unlike other sports or sedentary subjects, would improve postural stability during adolescence before a man's normal biological development. However, the meaning of this potential can be given by the abilities developed through this sport, or by its training/situations that facilitate the learning process. This further research on the influence of soccer training on postural control will have to search specifically for the factors that lead to a greater postural control; therefore, the project concerns the experiencing of two different training methodologies on 2 groups of children aged between 6-7 years, who will be offered their training program for 5 years and, at the beginning/end of every year/training cycle assessments will be made through a strength springboard of the COP in order to evaluate the postural stability of children. The educational applications will be made according to the cognitive and prescriptive teaching approach or that of eco-dynamic and heuristic learning type, with the aim of highlighting what type of methodological approach in soccer will lead to a greater postural control in adolescence in order to obtain additional data that can contribute to Peterson's research (2006) on the variables that influence the postural control during the adolescence.*

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**Keywords:** Training Methodologies; Cognitive Approach; Football; Postural Stability; Sport.

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### **Introduction**

The postural stability investigation in sports that require excellent postural performance provides to better understand the development of specific postural strategies. Years of training through the participation in a competition may significantly change the postural control system, which leads to an optimal use of the body for the sport in question. Understanding these transformations/adaptations is a valuable contribution to the sport sciences, because postural stability is a key factor in all sports.

A higher postural stability in athletes has been reported for some sports, but some targeted studies have shown that soccer players have a better postural stability. These results indicate that some soccer training components are in favor of postural control especially for adult athletes, while little is known about the rate of improvement of stability in preadolescent soccer players.

This knowledge is crucial in sport as it lets us know the specific stress (training) necessary to significantly improve postural control. It is important to get this information, a prospective study on soccer.

Many authors, on the other hand, have attempted to evaluate differences in postural control in athletes and in normal participants, athletes of different levels of expertise and athletes from different sports. These studies have produced different results but the players showed always greater stability than the others.

It was claimed that these specific soccer player's postures, strategies or adaptations are the result of their experience given by the continuous variables characterizing the game environment: working together with the team, anticipating the event, following tactical movement and position of opponents; In short, these postures/adaptations are given by different stimuli that the soccer environment offers.

The purpose of this study was to evaluate the postural stability in 2 groups of young soccer athletes who have played two different training approaches: training cognitive approach and training with dynamic ecological approach. The first sees a strong involvement with coach directives mode that imparts the same prescriptive exercises with the following steps: order, command, sequence, timing, executive motor model demonstration, execution and correction of the error. The types of exercises are repeated exercises, exercises varied in time and space, randomized exercises, mental training exercises. The second sees a very small role of the coach almost alien to the activities, who controls, monitors and suggests possible solutions having care to bring down the risk of injury and to ensure the continuity of the exercise. Training activities are defined as didactic and educational practices and involve athletes totally: choices of activities, technical and tactical solutions to problems. The most common modes are the circle time, the cooperative learning, the role play and the focus group.

### **Research Methodology**

The first part focuses on the preliminary study with the building of the research design and analysis of possible critical aspects.

The study will be carried out through 2 groups of young players by 6-7, to which the 5 different methods will be proposed for 2 years of training: training with prescriptive exercises and ecological cognitive-dynamic.

Each group will play for 5 years a training program that includes 3 training sessions per week of 2 hours. However it should be noted that, for both groups, 1 weekly game will be provided for.

At the beginning and at the end of each soccer season, for each individual player will be evaluated the variability of the COP in its oscillation characteristics variability (standard deviation of the COP), range, average speed ( $MV = \frac{\text{total length of the COP path}}{\text{sampling time}}$ ), and the frequency. Swing variability and speed are two commonly used parameters to evaluate postural performance and lower values of these parameters indicate minor postural stability. The swing frequency is an indication of the rate of exploratory actions that our balance system performs and is necessary to maintain stability. The frequency represents the amount of the work necessary to maintain stability (Olivier et al. 2008). It is a rough measure of the number of turning COP (anteroposterior and left-right) per second. When the postural request is more challenging or a specific group of subjects is less trained, the frequency of the COP increases. All dependent variables will be subjected to a statistical study (ANOVA) to evaluate the main effects soccer training and possible differences between the trained subjects with cognitive learning and the ecological dynamics. The results will then be compared to search quantitative data carried out by Ewa Biec & Michal Kuczynski in 2010, which by measuring the COP highlighted the differences in terms of postural control between children who practiced soccer and sedentary children.

In addition, qualitative aspects of young players will be evaluated, through direct observation of the coach. Skills in evaluation will be for both methods of training: 1) the ball guide 2) oriented monitoring 3) shooting.

## Expected outcomes of training methodology

**Table 1: Examples of Cognitive Exercises.**

1	Guide the ball between the cones only with the right foot
2	Guide the ball between the cones only with the left foot
3	dribble

Source: Our Elaboration

**Table 2: Examples of Ecological – Dynamic Exercises.**

1	1 player vs 1 player
2	4 players vs 3 players
3	Small games

Source: Our Elaboration

From this study we hope to get more data that tell us what is most suitable training for better postural stability during adolescence before the normal maturation of man, so that we can then investigate, having more specific data, on the main factors lead to a better postural control.

From the results it expects a greater postural control in the Group of children who will carry out ecological training-dynamic, as is the workout that most closely emulates the match.

## Discussion and Conclusions

It can be argued that soccer will lead to the better postural stability than non-athletes. However the meaning of this potential element can be given by the abilities developed through the sport and by its tutorials/situations that help you learn (2002). Therefore, from this study can obtain a basis of further data which indicate what is the most appropriate training for a greater postural stability in adolescence before the normal biological maturation, in order to be able to investigate, having more specific data, on the main factors that lead to improved postural control. The more pragmatic objective of the study is to highlight any neurophysiological and sensory-motor changes that may arise as a result of these activities.

**Table 3: Mean (SD) of the postural stability parameters in the soccer players and controls in both planes and both visual conditions**

	Eyes open			Eyes closed		
	Athletes	Controls	<i>p</i>	Athletes	Controls	<i>p</i>
<b>Medial/lateral plane</b>						
Variability (mm)	3.0 (1.4)	4.1 (2.2)	0.04	2.5 (0.9)	4.1 (1.8)	0.0003
Range (mm)	15.6 (10.2)	22.8 (17.0)	0.05	12.7 (4.8)	21.9 (10.3)	0.0003
Mean velocity (mm/s)	6.1 (2.9)	10.5 (3.2)	0.0001	5.7 (1.9)	10.9 (4.7)	0.0001
Frequency (Hz)	0.33 (0.07)	0.47 (0.10)	0.001	0.37 (0.11)	0.44 (0.12)	0.04
<b>Anterior/posterior plane</b>						
Variability (mm)	3.2 (1.1)	3.9 (1.5)	0.07	3.4 (1.4)	4.0 (1.3)	n/s
Range (mm)	15.6 (7.2)	18.5 (6.3)	n/s	16.1 (5.6)	20.5 (6.9)	0.02
Mean velocity (mm/s)	6.6 (2.9)	8.0 (2.5)	0.04	7.5 (2.1)	9.4 (3.3)	0.03
Frequency (Hz)	0.34 (0.09)	0.36 (0.12)	n/s	0.39 (0.14)	0.39 (0.14)	n/s

The *p* values are significance levels of the between-group differences resulting from planned comparisons

*n/s* non-significant

Source: Our Elaboration

This study may be important because it focuses on the benefits of physical activity on the postural control, particularly on training, felt also by further studies as sports which leads to an optimal postural control. The movement is knowledge, the body is a receptor surface and training is a form of learning that, if properly structured, can elicit the proper psychophysical development of the adolescent. The instrument that posturologists/coaches consists of the exercise that should not be merely arranged in quantitative terms: the development of strength, speed, power, but also in terms of quality compared to the variability and adaptability elements.

Therefore, it should deepen with further studies on the influence soccer training on postural control to know specifically the factors that lead to an improvement with the aim of a Special Education with overall effects on performance in adolescence, so as to obtain additional data that can help find Peterson on the variables that influence the postural control.

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