



# Effect of ball feeling training on agility performance in youth football players

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Info article	Abstract
<p><b>Filed in:</b> 2026-03-17 <b>Accepted:</b> 2026-05-28 <b>Published:</b> 2026-05-31</p> <p><b>Keyword:</b> <i>ball feeling training, agility, youth football, Illinois Agility Test, change of direction</i></p>	<p>This study aimed to examine the effect of ball feeling training on agility performance in youth soccer players and to compare the effectiveness of Side Stop and Go and Toe Tap training variations. A quasi-experimental design with a two-group pretest–posttest control group approach was employed. Twenty-one U16 football players were randomly assigned into three groups: Side Stop and Go (n = 7), Toe Tap (n = 7), and Control (n = 7). The intervention was conducted over six weeks with a frequency of three sessions per week. Agility performance was measured using the Illinois Agility Test before and after the training period. Data were analyzed using descriptive statistics and paired sample t-tests with a significance level of <math>p &lt; 0.05</math>. The results showed significant improvements in agility performance in both experimental groups, with the Side Stop and Go group demonstrating the greatest reduction in test time. The control group showed only minimal improvement. These findings indicate that ball feeling training effectively enhances agility performance, particularly when incorporating rapid directional change movements. The study supports the integration of structured ball feeling drills into youth football training programs.</p>

## 1. INTRODUCTION

Football is one of the most popular sports worldwide and requires a combination of technical skills, tactical understanding, psychological readiness, and physical fitness (Aji et al., 2014). During a competitive match, players perform repeated high-intensity movements such as sprinting, accelerating, decelerating, and changing

direction. Therefore, optimal physical conditioning is essential to maintain performance throughout the game. Among the various physical components required in Football, agility plays a crucial role in supporting technical execution and overall match performance (Soniawan et al., 2022).

Agility is defined as the ability to rapidly change direction or body position efficiently without losing balance. In Football, agility enables players to evade opponents, perform quick transitions between offensive and defensive phases, and maintain control during one-on-one situations. Players with superior agility can execute technical skills such as dribbling and ball control more effectively (Kurniawan et al., 2024). Conversely, insufficient agility may reduce reaction speed, limit movement efficiency, and negatively affect performance outcomes.

Despite its importance, agility training in youth football programs is often limited in variation and frequently separated from technical development (Sekulic et al., 2019). Many training sessions emphasize tactical drills or endurance conditioning, while specific agility-focused exercises integrated with ball control remain underutilized (Komarudin & Nyoman Wali, 2022). As a result, players may experience suboptimal improvements in movement efficiency and coordination.

One alternative training method that integrates technical and physical components is ball feeling training. Ball feeling exercises focus on developing players' sensitivity, coordination, and control when interacting with the ball (Febrian & Perwira Bakti, n.d.). Drills such as Toe Tap and Side Stop and Go involve rapid foot movements, directional changes, and neuromuscular coordination, which theoretically contribute to improvements in agility performance. By combining ball control and movement efficiency, this method aligns with the principle of training specificity, which suggests that adaptations are most effective when training closely resembles actual game situations (Sridadi et al., 2021).

Previous studies have reported positive effects of agility-based and ball-oriented training programs on Football performance. However, limited research has

specifically examined the comparative effects of different ball feeling training variations on agility performance among youth Football players using a structured quasi-experimental design (Batalipu et al., 2025). Therefore, further investigation is needed to determine the effectiveness of such training interventions.

The purpose of this study was to examine the effect of ball feeling training on agility performance in youth Football players and to compare the effectiveness of Side Stop and Go and Toe Tap training variations. The findings are expected to provide evidence-based recommendations for improving agility development in youth Football programs.

## **2. METHOD**

This study employed a quasi-experimental design using a two-group pretest–posttest control group approach. The purpose of the design was to determine the effect of ball feeling training on agility performance and to compare two different training variations (Side Stop and Go and Toe Tap). Participants were divided into two experimental groups and one control group. All groups completed a pretest and posttest assessment using the Illinois Agility Test (Soniawan et al., 2021).

### **Participants**

The participants consisted of 21 male youth Football players (U16) from a Football school program. All participants were actively involved in regular training sessions prior to the study. Total sampling was applied because the entire population of U16 players met the inclusion criteria. Participants were randomly assigned into three groups: (1) Experimental Group 1 (Side Stop and Go training) (n = 7) (2) Experimental Group 2 (Toe Tap training) (n = 7) (3) Control Group (regular training only) (n = 7). Inclusion criteria included: (1) active participation in training, (2) no injury during the study period, and (3) willingness to complete the full intervention program.

### **Training Protocol**

The intervention was conducted over six weeks with a frequency of three sessions per week, resulting in 18 total training sessions. The program followed the principle of progressive overload, with training intensity gradually increased from 40% to 90% of maximal effort.

Each session consisted of 3 sets with a 3-minute rest interval between sets. The Side Stop and Go drill emphasized lateral movement and rapid directional changes, while the Toe Tap drill focused on rapid alternating foot contact on the ball to enhance coordination and foot speed. The control group continued their regular training program without additional ball feeling exercises.

#### Instruments and Data Collection

Agility performance was measured using the Illinois Agility Test. The test required participants to sprint and change direction around cones arranged in a standardized pattern. Performance time was recorded in seconds using a stopwatch. All participants completed a pretest before the intervention and a posttest after six weeks of training. A lower time score indicated better agility performance.

#### Statistical Analysis

Data were analyzed using IBM SPSS software. Descriptive statistics (mean, standard deviation, minimum, and maximum values) were calculated to summarize the data. Normality was assessed using the Shapiro–Wilk test due to the small sample size. Homogeneity of variance was tested using Levene’s test. Paired sample t-tests were conducted to compare pretest and posttest results within each group. Statistical significance was set at  $p < 0.05$  (Rachman et al., 2024).

#### Ethical Considerations

Participants were informed about the study objectives and procedures prior to data collection. Participation was voluntary, and informed consent was obtained from players and their guardians. The study was conducted in accordance with ethical standards for research involving human participants.

### 3. RESULTS AND DISCUSSION

#### Descriptive Statistics

Descriptive statistics of agility performance for each group are presented in Table 1.

**Table 1.** Illinois Agility Test Results

Group	Test	N	Mean	Minimum	Maximum
Side Stop and Go	Pretest	7	18.64	17.93	19.86
	Posttest	7	17.70	17.10	18.91
Toe Tap	Pretest	7	18.83	18.02	19.43
	Posttest	7	17.94	17.21	18.57
Control	Pretest	7	18.39	17.45	19.82
	Posttest	7	18.25	17.39	19.74

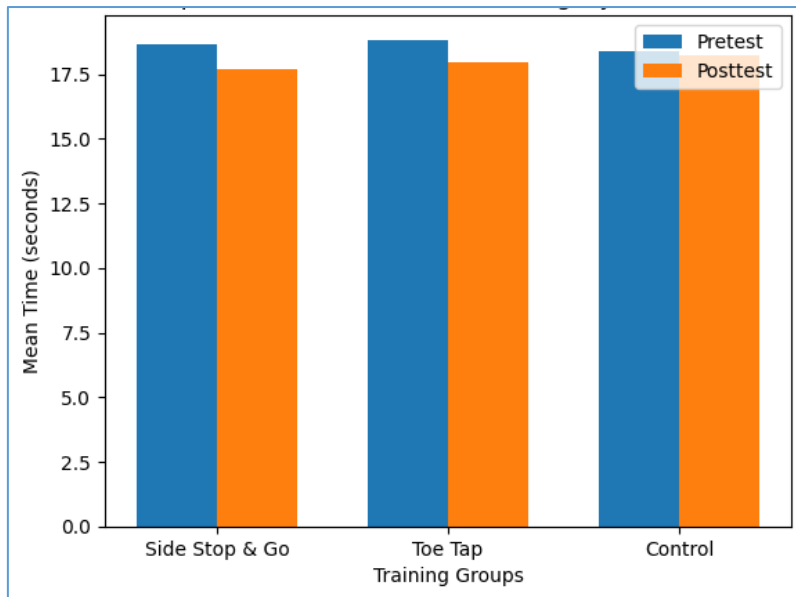
The results show a decrease in mean agility time for both experimental groups after the intervention. The Side Stop and Go group improved by 0.94 seconds, while the Toe Tap group improved by 0.89 seconds. The control group showed a smaller improvement of 0.14 seconds. The results of the paired sample t-test are presented in Table 2.

**Table 2.** Paired Sample t-Test Results

Group	Mean Difference	t	df	p-value
Side Stop and Go	0.93857	9.993	6	0.000
Toe Tap	0.89143	6.490	6	0.001
Control	0.14000	2.763	6	0.033

The Side Stop and Go group demonstrated a statistically significant improvement in agility performance ( $p < 0.05$ ), with the largest mean difference among all groups. Similarly, the Toe Tap group showed a significant improvement ( $p < 0.05$ ). Although the control group also showed a statistically significant difference, the magnitude of improvement was considerably smaller compared to the experimental groups.

Overall, the findings indicate that ball feeling training significantly improved agility performance, with Side Stop and Go training producing the greatest improvement.



**Figure 1.** Comparison of Test Results

The figure 1 above illustrates the comparison of the mean Illinois Agility Test times across the three groups (Side Stop & Go, Toe Tap, and Control) before and after the intervention.

The results indicate that the Side Stop & Go group demonstrated the greatest reduction in agility time. The Toe Tap group also showed a notable improvement. The Control group exhibited only a slight decrease in time.

Since lower time scores in agility tests reflect better performance, the chart clearly demonstrates that both ball feeling training methods effectively enhanced agility performance (Zulkarnain & Haqiyah, 2018). Among the two, the Side Stop & Go training method produced the most substantial improvement.

The present study aimed to examine the effect of ball feeling training on agility performance in youth Football players and to compare the effectiveness of two training variations: Side Stop and Go and Toe Tap. The findings revealed that both experimental

groups demonstrated significant improvements in agility performance following six weeks of structured training (Millah et al., 2022). Among the two interventions, the Side Stop and Go training produced the greatest improvement.

The improvement in agility performance can be explained by neuromuscular adaptations resulting from repeated multidirectional movements (Mohammad Hasan Basri & Noer Wahid Riqzal Firdaus, 2020). Agility is closely associated with the ability to rapidly accelerate, decelerate, and change direction while maintaining balance. The Side Stop and Go drill emphasizes lateral movement, abrupt stopping, and rapid directional transitions, which stimulate coordination between the nervous system and skeletal muscles. Such stimuli enhance motor unit recruitment efficiency, dynamic balance, and reaction speed (Yogaswara, 2021). In contrast, the Toe Tap drill primarily focuses on rapid foot contact and rhythm coordination, which improves foot speed and ball control but may involve less pronounced directional change compared to Side Stop and Go.

These findings are consistent with previous research indicating that agility training integrated with ball control improves Football performance. Studies have reported that training models incorporating change-of-direction movements lead to significant improvements in agility and dribbling performance in youth players (“Youth Sports Training Method Based on Virtual Reality Technology,” 2022). The current study extends these findings by demonstrating that ball-oriented drills, when structured progressively and applied consistently, can produce measurable improvements in agility performance within a relatively short training period.

Although the control group also demonstrated a statistically significant improvement, the magnitude of change was substantially smaller than that of the experimental groups. This minor improvement may be attributed to routine Football training activities performed during the study period (Arrosyid et al., 2023). However, the greater improvement observed in the experimental groups confirms that specific ball feeling training provides additional benefits beyond regular training programs.

From a practical perspective, ball feeling training particularly the Side Stop and Go variation can be recommended as an effective and engaging method for improving agility in youth Football players. The integration of technical and physical elements within a single drill aligns with the principle of training specificity, allowing players to develop agility in contexts closely related to actual match situations (Prasetyo & Awang Irawan, 2020).

Despite the positive findings, this study has several limitations. The sample size was relatively small, and the participants were drawn from a single youth Football program, which may limit the generalizability of the results. Additionally, the study did not calculate effect size or long-term retention of training adaptations (Raga et al., 2016). Future research should involve larger samples, randomized controlled designs, and additional performance variables such as sprint speed or dribbling efficiency.

Overall, this study provides empirical evidence that ball feeling training significantly enhances agility performance in youth Football players, with Side Stop and Go drills demonstrating superior effectiveness compared to Toe Tap training.

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### **4. CONCLUSION**

These results indicate that ball feeling training, particularly the Side Stop and Go variation, can be recommended as an effective and practical approach for improving agility in youth Football players. Future studies are encouraged to involve larger sample

sizes and randomized controlled designs to further validate these findings and explore additional performance variables.

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