Classification of Football Technique – Literature Review

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Abstract In this literature review we focus on classification of football technique elements and skills through successful practices and conducted studies. Football technique is one of the pillars of modern football player and team analysis and is defined as sport skill that has a certain way of solving a movement task (sport skill content) in accordance with the rules of the respective sport, the athlete's biomechanical conditions and movement possibilities. Authors consider various features of football technique classification, such as difficulty of player movement, structure of player movement, type of player movement and playing position. Some of the fundamental techniques include kicking, dribbling and for goalkeepers catching the ball. Advanced technical skills include pendulum passing, leg scissor interception, etc. Based on game tactics, it also depends for players whether they are in possession of the ball or not. However, football technique can relate to various skills and attributes which are differently interpreted by authors. The aim of the review is to present key elements, skills and attributes observed in the previous research focusing technical skills in football. Moreover, the review focuses on comparative analysis of small-sided games technique evaluation, which serves as a cornerstone for football coaches in understanding the quality of the players. The results show that different sizes of the field, number of players on the pitch and overall quality of the players play an important role in successfully evaluating skill development.

Keywords: football technique, skills, small-sided games, skill evaluation

University of Maribor Press

DOI https://doi.org/10.18690/um.fov.3.2023.82
ISBN 978-961-286-722-5

1 Introduction

Development of talented athletes has been among the key points of many sport clubs and associations in the past decades. To achieve the level of excellence in sports, talents are required to train on a full- time schedule during their adolescent period. Moreover, they are taught that a total commitment of time, energy and emotions are needed to succeed in becoming a professional athlete, which often comes at a cost of social contacts outside the sport club. However, only a small percentage of all talented athletes eventually reach exceptional levels, regardless of their sacrifices they have to make during the development phase (Côté et. al., 2009). Research results suggest, that technical skills play an important role in achieving the elite level in football (Slaidiņš & Fernāte, 2021, Rebelo et. al., 2013, Vaeyens et. al., 2006). Various technical skills (e. g., tackling, heading, passing crossing, first touch, striking the ball, one-versus-one ability, technical ability under pressure, etc…) are determining aspects in the development of youth player, hence, it is necessary to evaluate the optimal approach in implementing and executing a focused technical training (Gioldasis et. al., 2017). The term »Football technique« has not yet been precisely defined in the scientific literature. Authors use variety of descriptions and expressions for »technique« which leads to diverse meanings and use of the term. Slaidinš & Fernāte (2021) define technique as the most rational and efficient execution of movements in order to achieve the highest results. Authors continue, that football technique is mainly classified according to the player's actions with or without the ball, the level of difficulty of the technique element, the role of the players and the player's actions on the spot or in motion. Elsner (1984) agrees with the definition and supplements it by adding technique as a complex specialized system of simultaneous and sequential movements that are rationally oriented for organisation of alternating internal and external forces that act on the athlete with the goal of these forces to be used in accordance to achieve high sports results. Additionally, he classifies movements into natural and other/specific (football) movements. The latter are specific as they are performed with less trained limbs such as head or legs. According to Pocrnjič (2003), football technique is classified by movement, a player can either have a possession of the ball or not. Movements of a player in possession of the ball contains technique of dribbling with the ball (instep, inside foot, front inside foot, outside foot and back foot), shooting the ball (instep, inside foot, front inside foot shooting diagonally forward, backward and under 90 degree angle, outside foot forward and diagonally forward, toe-punt shooting, back

foot shooting, inside foot shooting behind the standing leg, inside-out shooting with inside, outside and front inside foot, shooting with head, volley with toe-punt, inside, outside and front inside foot and drop kick shooting with toe-punt, inside and outside foot), stopping the ball according to the barrier principle (low balls with inside foot, medium balls with inside foot, high balls with chest and thigh, high balls with inside foot immediately after the bounce), stopping the ball according to the amortisation principle (low balls with inside foot, medium balls with inside foot, high balls with chest, thigh and instep), stopping the ball with pull (with inside foot, with outside foot, with inside foot behind the standing leg), stopping the ball with turn (with amortisation of inside foot and inside foot + outside foot, with pull of inside foot, outside foot and inside foot behind the standing leg, high balls with chest), dispossessing the ball (basic dispossessing with inside foot, by pushing, by intercepting or sliding), throw ball from out of bounds, faking with ball (with outside foot, front inside foot and back foot, feinting in front of the ball, over the ball and around the ball, feinting with pulls, turns, and other), and goalkeeper technique (positioning, movements, diving, catching the ball, throwing the ball, boxing and bouncing the ball, hitting the ball). Movements of a player without

possession of the ball includes running/sprinting (to the front, back and sideways under 45, 90, 135, 180, 270 degrees angle, with turn of 180- and 360-degrees angle), one foot and two-foot jumps, falling and getting up, tricking the opponent without the ball. Sgrò et. al. (2018) claim, that high-level of technical skills present a key factor for an optimal performance. Authors point out small-sided games (SSGs) as well-worthy and valid methodology to simultaneously train many skills by reproducing several conditions of a real match. Small-sided games are modified formats of play, where coaches adjust number of players on this pitch, rules of the game, pitch configuration, etc (Davids et. al., 2013). Clemente et. al. (2020) demonstrates how manipulating these conditions triggers an instant effect on players' responses in Four-Coactive Model of player preparation, i. e. tactical behaviour, technical execution, cognitive and physical demands. Technical skills and their execution are usually analysed using instruments focused on observing accuracy of skill-related actions. According to Jones & Drust (2007) technical skills have significantly higher importance when number of players decreases as fewer players have more contact with the ball. According to Owen et. al. (2011) size of the field where SSGs are played plays an important role as players perform longer passes and have to hit the ball with head more often. On the contrary, players are exposed to higher pressure

by opponent players, need to move faster with the ball, perform more dribbles to create space and shoot more often in the fields which are smaller. Hence, trainings in formats with a greater number of players are more useful for defenders as they have to make more head shots and perform in defensive actions such as intercepting the ball or blocking the shots. On the other hand, trainings in formats with fewer number of players is more useful for midfielders and attackers. Another example of successful technical skills training is unbalanced SSG. Coaches have developed 5vs4 and 5vs3 formats training systems, where attackers perform more shots on goal and passes when the defenders were outnumbered by one or two players (Vilar et. al., 2014). To provide a comprehensive overview on impact of the SSG-based programs on technical execution, it is necessary to present already conducted studies in that field.

Methodology

A large number of studies have been conducted and published in the past 20 years in the field of SSGs. The design of the research is descriptive with the target to consolidate literature review about use and impact of SSGs on football-related technical skills. The research was collected in the online databases, including Web of Science (WoS), Scopus, Science Direct, ProQuest, Google Scholar and ResearchGate. The databases were selected according to the quality of the papers published in them. Most of the authors included in the review have a significant h-index. The keywords used in search were mostly connected to football technique, technical skills in football and eventually SSGs. Only articles from journals, working papers and online books were identified as adequate. We manually followed the references (snowball effect) of the articles with relevant topic.

Results

The studies were arranged into groups, which were based on factors effecting the evidences on technical skills. These factors include pitch size, rules, number of players, duration of exercise, etc. SSGs were played from 1vs1 to 9vs9.

Owen et. al. (2004) conducted a study on formats 1vs1, 2vs2, 3vs3, 4vs4 and 5vs5. Authors examined passing, receiving, turning, dribbling, heading, tackling, blocking and interception. The results have shown that an increase in the number of players

causes a reduction of technical events for single player. Jones & Drust (2007) tested the evidences on 4vs4 and 8vs8 SSGs, whereas they focused specifically on ball contacts. The demands in 4vs4 were greater than those observed in the 8v8 games. Katis & Kellis (2009) observed 3vs3 and 6vs6 trainings with focus on short passing (> 10 m), long passing (< 10m), dribbling, shooting, heading and tackling. Short passing, dribbling, shooting and tackling had higher impact on technical skills when less players were on the pitch, whereas long passing and heading were more significant in 6vs6 matches. Da Silva et. al. (2011) compared 3vs3, 4vs4 and 5vs5 SSG formats with focus on ball contacts, passes, target passing, crossing, dribbling, shooting on goal, tackling and heading. Only crosses, dribbles and shooting on goal were identified as more often in 3vs3 compared to other formats. Other skills did not turn out to be significant for either of the formats.

Table 1: Technical comparison between small-and large-sided games (n = 15)

	Small-sided game (3 vs. 3 + goalkeepers)		Large-sided game (9 vs. 9 + goalkeepers)		
	Frequency†	CV (%)	Frequency†	CV (%)	Effect size
Block	4 ± 2	17.2	13 ± 2	16.6	4.6 (Large)
Dribble	28 ± 3	10.4	11 ± 1	8.8	7.9 (Large)
Header	6 ± 1	0.1	15 ± 1	5.4	15.8 (Large)
Interception	6 ± 1	0.1	27 ± 1	5.2	21.2 (Large)
Pass	193 ± 6	3.1	283 ± 2	0.8	19.9 (Large)
Receive	185 ± 4	2.3	267 ± 4	1.3	21.0 (Large)
Shot	53 ± 3	5.6	33 ± 2	5.8	8.2 (Large)
Turn	25 ± 2	9.6	36 ± 2	4.5	5.4 (Large)
Tackle	14 ± 1	9.1	12 ± 1	10.7	1.5 (Large)
Total ball contacts per game	443 ± 94‡	1.1	625 ± 137	0.8	1.6 (Large)
Ball contacts per individual	111 ± 23‡	1.1	63 ± 14	0.8	2.5 (Large)

*CV = coefficient of variation.
†Total frequency during the 3 × 5-minute sided games.
‡Significant difference between small- and large-sided games at $p < 0.05$.

Source: Owen et. al. (2011)

Owen et. al. (2011) conducted a study with focus on 3vs3 + goalkeeper and 9vs9 + goalkeeper. Observed technical skills included passing, receiving the ball, turning, dribbling, heading, tackling, blocking, intercepting and ball contacts. The results show that the number of dribbling, shots, tackles and ball contacts per player were higher in the format with lower players on the field, while head shots, blocks, interceptions, passes and receives were higher in 9vs9 format. Abrantes et. al. (2012) found no significant evidences on differences in use of technical skills in 3vs3 and 4vs4 formats. Authors focused on passes, receives, dribbles, shots, tackles, interceptions, conquered and lost balls and neutral balls. Clemente et. al. (2014) used Team Sport Assessment Procedure to observe successful shots on goal, volume of

play, efficiency index and performance score in 2vs2, 3vs3 and 4vs4 SSG formats. Authors detected higher values in volume of play, efficiency index and performance score in 2vs2 format compared to 3vs3 and 4vs4. Owen, et al. (2014) found evidence of more passes, dribbles and shots in SSGs compared to medium-sided games (MSGs) and large-sided (LSGs) games, whereas head shots were more significant in the latter two.

Another important factor in addressing the development of technical skills during training sessions is field size. Owen et. al. (2004) conducted a study for different SSGs performing on different field sizes. 1vs1 was played on 5 x 10, 10 x 15 and 15 x 20 m field size. 2vs2 on 10 × 15, 15 × 20, 20 × 25 m, 3vs3 on 15 × 20, 20 × 25, 25 × 30 m, 4vs4 on 20 × 25, 25 × 30, 30 × 35 m, and 5vs5 on 25 × 30, 30 × 35, 35 × 40m field sizes. Authors focused on passes, receives, turns, dribbles, headers, tackles, blocks and interceptions. No significant difference was found by changing playing field's size. Tessitore, et al. (2006) analysed 6vs6 matches on a 30 x 40 m and 50 x 40 m field sizes. Authors focused on the number of actions, consecutive passes and players involved in ball possession. Similar to the results of Owen et. al. (2004), no significant differences were found. Kelly & Drust (2009) analysed 5vs5 + goalkeeper on a 30 x 20, 40 x 30 and 50 x 40 m size fields. Authors focused on passes, receives, turns, dribbles, head shots, tackles, interceptions, shots and target passes. Changing the size of the field altered number of tackles and number of shots. On the same field sizes Hodgson et al. (2014) performed a study for 4vs4 SSGs. Investigated skills included passes, turns, dribbles, shots, tackles, head shots and interceptions. Greater technical demands were observed in the smallest of the fields.

Table 2: Means (+standard deviations) and 95% confidence intervals (in parentheses) for the observed motor behaviours of players in the different small-sided game formats: The final column shows the correlations between effective playing time (EPT) and each of the physical variables

Behaviours	SSGL	SSGM	SSGS	Correlation with EPT
Tackle	3.0 ± 0.9 (2.1 to 3.9)	4.5 ± 2.1 (2.3 to 6.7)	3.0 ± 2.7 (0.2 to 5.8)	0.148
Interception	6.3 ± 1.5 (4.7 to 7.9)	8.3 ± 2.6 (5.6 to 11.0)	11.2 ± 3.1 (7.9 to 14.4) [a]	−0.522*
Control	1.7 ± 1.7 (−0.2 to 3.5)	1.8 ± 1.3 (0.4 to 3.2)	2.8 ± 0.9 (1.8 to 3.9)	−0.394
Control and dribble	1.7 ± 0.8 (0.8 to 2.5)	4.5 ± 1.5 (2.9 to 6.1) [c]	5.2 ± 1.7 (3.4 to 7.0) [a]	−0.494*
Control, dribble, and pass	14.2 ± 4.2 (9.8 to 18.5)	13.8 ± 5.5 (8.1 to 19.6)	10.2 ± 6.5 (3.3 to 17.0)	0.277
Control and pass	18.7 ± 4.3 (14.1 to 23.2)	16.8 ± 6.1 (10.4 to 23.2)	14.5 ± 6.6 (7.6 to 21.4)	0.204
Control and shoot	2.2 ± 1.7 (0.4 to 3.9)	1.8 ± 1.6 (0.1 to 3.5)	5.0 ± 2.4 (2.5 to 7.5) [b]	−0.451
Control, dribble, and shoot	1.0 ± 0.6 (0.3 to 1.7)	1.5 ± 1.97 (−0.6 to 3.6)	2.5 ± 0.5 (1.9 to 3.1)	−0.346
Header	1.7 ± 1.0 (0.6 to 2.7)	2.3 ± 2.2 (−0.3 to 4.7)	4.0 ± 2.1 (1.8 to 6.2)	−0.542
First-touch pass	9.0 ± 5.6 (3.1 to 14.9)	11.3 ± 2.9 (8.2 to 14.4)	10.3 ± 3.3 (6.8 to 13.8)	0.105
Clearance	2.3 ± 1.0 (1.2 to 3.4)	3.8 ± 2.6 (1.1 to 6.6)	8.0 ± 2.9 (4.9 to 11.1) [a,b]	−0.566
Putting ball in play	12.2 ± 4.3 (7.6 to 16.7)	16.5 ± 1.6 (14.8 to 18.2)	27.7 ± 3.8 (23.6 to 31.7) [a,b]	−0.871**

Note: SSGL (large pitch), SSGM (medium pitch), SSGS (small pitch).
Post-hoc Bonferroni test: [a] $SSG_S > SSG_{\bar{M}}$; $SSG_S > SSG_M$; [c] $SSG_M > SSG_L$ ($P < 0.05$ in all cases).
Pearson's correlation coefficients: *$P < 0.05$; **$P < 0.01$.

Source: Casamichana & Castellano (2010)

Casamichana & Castellano (2010) show, that the frequency of technical actions is higher when SSGs are playing on a smaller field. Their study was conducted on a 75, 175 and 275 square meter field size. Among the tested skills were tackles, interceptions, control, control and dribble, controlling dribble and passes, first-touch pass and head shots. All the tests were performed on 5vs5 + goal keeper SSG format. Vilar et al. (2014b) analysed ball-possession, shots and passes on a 28 x 14, 40 x 20 and 52 x 26 m fields for 5vs5 SSGs. The results show that by reducing the field dimensions the opportunities of ball-possession are reduced, while the opportunities to shot on goal remain almost unchanged.

Next important factor in analysing technical skills in football are rules. Football coaches often adapt the rules of the games and exercises in order to retrieve information from the technical perspective. The most common changes in the SSGs include limitation of ball's touches or score goal with three or more passes or maintain ball possession for a specific duration. Dellal et. al. (2011) used 4vs4 SSG format analysing how several number of ball's touches (1 touch, 2 touches and free play) influence number of duels, % of successful passes, number of balls lost and total number of ball possession. The results show that the players had more difficulties performing specific technical actions when number of touches were limited. The authors conducted a study for 2vs2 and 3vs3 and the results were similar. The percentage of successful passes dropped when number of ball touches

were restricted. Mallo & Navarro (2007) used 3vs3, 3vs3 + 2 jolly's and 3vs3 + goalkeeper as SSG format. They focused on ball possession without any limitations regarding the rules. The investigated skills included ball contacts, short distance passes and shots on goal. In a game without jollies and goalkeepers more contacts with the ball were made and players performed more short passes, however, more mistakes were made in comparison with the other two cases. Rebelo, et al. (2011) conducted a study with 5vs5 + goalkeeper and 5vs5 without a goalkeeper focusing passes, receiving the ball and losing balls with training focus on ball-possessing versus goal-scoring. Higher technical demands were necessary in a ball-possessing matches, which complies to the findings of other authors due to the errors of keeping the ball in possession more often. Almeida, et al. (2012) analysed 3vs3 + goalkeeper in a free-form, 2 touches and 4 passes before score situations. The authors investigated simple and compound technical skills and the results show that the most goals, shots on goal and faster pace of the game were performed when 2 touches rule was used. In 4 passes before the score training players developed best ball-possession strategy of play. Clemente, et al. (2014) analysed 2vs2, 3vs3 and 4vs4 situations for three different scenarios; cross the endline on the opponent side, cross any of the two goals on each side and cross one goal on each side. Efficiency index, performance score and attacking play was most used when first rule was used. Second rules supported only volume of play index while third rule was most effective in defensive strategy.

Important factor used in SSGs format is duration of the exercise and recovery following the training. Tessitore et al. (2006) examined 3'/15'; three minutes of gameplay followed by 15-minute rest and 8'/end in a 6vs6 format SSG. The authors investigated number of actions, consecutive passes, of players involved in ball-possession. No significant differences were identified changing the ratio between exercise duration and rest. Similar research was conducted by Fanchini, et al. (2010), where authors examined 3vs3 in a 2'/4' (active), 4'/4' (active) and 6'/4' (active) time controls. The investigated skills contained passes, unsuccessful passes, successful passes, dribbling, head shots, turns, interceptions, tackles, shots and shots on target. Similar to Tessitore et. al. (2006), no significant changes were observed. Christopher, et al. (2016) monitored passes, successful passes, unsuccessful passes, shots, shots on target, goals, individual possession and regains in a 6vs6 SSGs for 8'/no rest, 2 x 4'/1 and 4 x 2'/45" time controls. The results show highest number of successful

passes and fewest errors during the first-time control, while most shots on goal and scored goals in a 2' and 4' time controls respectively.

Another variable analysed in previous studies is experience/level of a player performing a technical skill. Amateur players tend to make more mistakes compared to semi-pro or professional football players. Results from Dellal, et al. (2011) are compliant with this statement.

Table 3: Technical actions of the teams during 4vs4 SSG

Technical action	LLTvLLT	LLTvHLT	HLTvLLT	HLTvHLT
Passes	122	91	145	126
% passes	79	67	81	79
Shots	14	11	20	15
Steals	18	17	20	16
Turnovers	10	11	9	12

Note. Each column contains the total number for two 4v4SSG. LLTvLLT = lower level teams mutual 4v4SSG, LLTvHLT = lower level teams in the 4v4SSG against higher level teams, HLTvLLT = higher level teams in the 4v4SSG against lower level teams, HLTvHLT = higher level teams mutual 4v4SSG. % passes = accuracy of passes.

Source: Hůlka, et al. (2015)

Hůlka, et al. (2015) measured passes, accuracy of passes, shots on goal, tackles and turnovers in low- level and high-level teams. The low-level teams performed fewer passes and shots; they were also less accurate in passing the ball against stronger opponents. Moreover, they performed shorter offensive sequences and scored less goals. Prieto, et al. (2015) focused on coach management with focus on encouraging players during the training session. Investigated skills included successful passes, unsuccessful passes, intercepting the ball, tackling, head shots, control and pass and control-run and pass skills. Coaching effect provided a positive effect on psychological level of the team but a negative effect on technical skills.

Conclusion

The goal of this literature review was to classify football technique skills through successful practices and studies performed by other researchers. The term itself is not precisely defined and therefore, authors analyse different skills/factors in their

investigations. Most authors conclude that technique is rationalising and optimising movement with and without a ball to achieve best results. Among these we find fundamental skills such as shooting, passing, intercepting, controlling the ball, turning, heading, dribbling, etc. SSG training method presents a useful tool in investigating technical skills as it replicates the regular field with less effort to perform analysis. However, significant differences have been found in between the use of small-sided games and large-sided games format. There is a widespread consensus among researchers that games with fewer players increase opportunities to perform technical processes such as passing, dribbling, overcoming the opponent or shooting on goal/target, while opportunities for head shots, blocking and intercepting the ball increase in games with higher amount of players on the field. Also, the results of studies show similar effect in size of the field. Players need to be faster and more agile on a smaller field to dominate their counterpart. On the other hand, more opportunities for retaining the ball occur on larger field sizes. Larger playing fields also seem to benefit less-skilled players as they can execute their technical ability better without the pressure of the opponent. On the contrary, better-skilled players seem to strive in smaller field sizes where they perform more effectively in comparison with their less-skilled counterparts. According to the analysis, an important effect seem to be obtained by manipulating the rules of the SSG exercises. On the other hand, there is no signficant influence provided on training process of

technical skills in duration of the exercise and the recovery period. This literature review reveals significant and positive effects of using SSG training sessions on improving technical execution in control groups. However, the results of the studies demonstrate only part of the needed development process of youth football players. Therefore, future research should consider technical skills in connection with tactical behaviour, physical abilities and mental awareness to be assessed during SSG interventions.

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