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The individual offensive effectiveness of top level soccer players during an encounter and in close contact with an antagonist – secondary analysis based on the methodological criterion of the theory of combat sports

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A Study Design
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Abstract

Background & Study Aim: In all team games with different frequency, it comes to an encounter of players ("one against one" or "one against group") from opposed teams. Regardless of similarities, the specialists of particular team games base the analysis of such events on specific methodologies and consequently on different terminology (different languages). The aim of this study is the individual offensive effectiveness of top level soccer players during such encounter and in close contact with an antagonist based on the methodological criterion of analysis of the theory of combat sports.

Material & Methods: The analysis of the matches between the national teams of Poland and Germany fought over in qualifying groups during the 2006 World Cup finals (0 : 1) and the 2008 European Championship (0 : 2). Effectiveness and reliability indicators were applied to assess individual actions of a soccer player from the perspective of team effectiveness. Secondary analysis of these indicators based on criterion of struggle dynamics measurement (according to the theory of combat sports) was applied in order to develop personal profiles broken down into formations (defenders, midfielders, strikers).

Results: In both matches, the members of German national team outnumbered Polish players in terms of all offensive effectiveness indicators in close contact ("one against one", "one against group") and during an "encounter" ("one against one"). As far as the 2006 World Cup is concerned, statistically significant differences were as follows: personal offensive dynamics (POD Index) $p<0.05$; individual offensive effectiveness (IOE) $p<0.01$; offensive effectiveness "one against group" (OAG) $p<0.01$; whereas in the case of the 2008 European Championship they amounted to: POD Index $p<0.01$; OAG $p<0.01$; encounter effectiveness (EE) $p<0.01$; offensive effectiveness "one against one" (OAO) $p<0.01$.

Conclusions: Profiles of individual soccer players are the empirical basis for the development of individual training programs. With the profiles of soccer players from the opposed team it is possible to develop tactics for limiting the effectiveness of leaders during an encounter, "one against one" and in close contact with an antagonist and a group of players.

Key words: combat dynamics phenomenon • encounter • extreme situation • fun forms of martial arts • motor safety • reliability

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Combat dynamics phenomenon – is defined by the following indexes: activeness, effectiveness of attack, effectiveness of counterattacks and defensive effectiveness [19]. A new element was proposed as an addition – offensive activeness, as a counterpart of the combat dynamics evaluation [20].

Offensive activeness index (OA) – which was a proportion of the number of 10-second combat sequences, during which the contestant attempted at one offensive action (attack), aiming at gaining advantage, to the number of all sequences in a fight [20].

Praxeology (praxiology) – science about good work. *A Treatise on Good Work*, a fundamental lecture of praxiology by T. Kotarbinski (the first edition in 1955) has been translated into majority of the so-called congress languages (English, German, Russian) and as well: Czech, Japanese, and Serbo-Croatian.

Encounter (conflict, dash) – is a destructive fight in the stage of each other's hit of two fighting parties, nevertheless destroying an escaping foe is no encounter [36, p. 231]. In a wide meaning an encounter is a simultaneous mutual knock – both sides attack, or one party attacks and the other counter-attacks. Such situations are typical for males of some animals' species for primacy in a herd. By an encounter begin contemporary sumo fights. An encounter is frequent on fencing fights, boxing, and other combat sports which are in knocking a competitor [37, p. 258].

Team sport – *noun* any sport that is played between two or more teams, e.g. football, tennis or hockey [35].

Football – *noun* **1**.UK a game in which 2 teams of 11 players try to kick or head a round ball into the goal defended by the opposing team. Also called **soccer 2.** any game in which two teams kick or carry a ball into a goal or over a line, e.g. rugby, Australian Rules or Gaelic football **3.** the large round ball used in the game of football [35].

Soccer – *noun* US same as football [35].

Football ground – *noun* a place where football matches take place, including the field on which the game is played, the area where the spectators

Introduction

Individual actions are the basis of team games as each group action is undertaken in the context of an individual decision taken by a player and constitutes a sequence of events which take place to achieve objectives of given game [1]. In general, players' actions are described with the use of professional language of given team game (basketball, hockey, soccer, volleyball etc.). This is understandable as it facilitates communication between all entities interested in given team game – and it does not exclude its supporters (fans). However, if numerous divisions and classifications of sport types and disciplines developed within the sport science include a homogeneous (in some respects) group called team sport (sport game) [1-8], scientific analysis of the game and preparation of athletes for this type of sport struggle may be universally applicable.

Each sport type which involves competition between at least two athletes or two teams may be analysed as a struggle in line with the criteria of praxeology – according to Tadeusz Kotarbinski [9-12] – on "the intermediate level" of stage of generalization. Barczyński and Kalina [13, 14] pointed out that in such circumstances it is more precise to refer to the criteria of agonology (science about struggle) instead of praxeology. The general theory of struggle published in 1938 was named by Kotarbinski as agonology [9] and he returned to it in later publications [11, 12]. His fundamental work – complete lecture on praxeology – was published for the first time in 1955 [10]. The theory of struggle (agonology) was included in praxeology.

In all team games with different frequency, it comes to an encounter of players ("one against one" or "one against group") from opposed teams. Regardless of similarities, the specialists of particular team games base the analysis of such events on specific methodologies and consequently on different terminology (different languages).

The aim of this study is the individual offensive effectiveness of top level soccer players during such encounter and in close contact with an antagonist based on the methodological criterion of analysis of the theory of combat sports.

Material and methods

The analysis pertained to the matches played by the national teams of Poland and Germany in qualifying groups during the 2006 World Cup finals (0 : 1) and the 2008 European Championship (0 : 2). Effectiveness and reliability indicators were applied to assess individual actions of a soccer player from the perspective of team effectiveness.

The method of secondary, multiple direct observation was applied with the use of audio-visual records. The effectiveness of three categories of offensive actions determined by the number of participating athletes and the scope of the game was the subject of analysis (the symbol of given phenomenon provided in brackets is used in the tables and further in the text). Two of them involve a situation when soccer players are in close contact: "one against one" (**1↔1**); "one against group" (**1⇔G**). The third one involves an encounter (⊗) of two players from opposing teams or one player with several players from the opposing team and in extreme cases also with players from the opposing team and one's team (therefore the number of players participating may not be even on both sides). The "scope of the game" in close contact with an antagonist (in situations **1↔1** or **1⇔G**) is the area in which player's actions take place encompassed by a circle with a radius of 2 metres and in situation ⊗ with a radius of 0.5 metre. Therefore, in extreme cases the contact between players may occur both through the ball or directly "body-body" (as well as in the scope permitted by the regulations or in violation of the regulations).

Individual attack takes place in situation **1↔1** or **1⇔G** and it is performed by the one who has the ball and through this action seeks to create an opportunity to score a goal (others either are passive or assist in this attack by means of relevant offensive actions without the ball – readiness to follow-up shot is of particular importance [15]). The essence of the struggle lies in the fact that no soccer player has the ball ready to be used upon commencing the action (take over, pass to another player, hit towards the goal, etc.). A typical example includes struggle for a ball in a jump involving at least two players from opposed teams or a situation when goalkeeper and any player from the team defending oneself interfere with actions of an opponent carrying out an attack with his head.

Individual offensive actions in an offensive game in situation **1↔1** may be assessed as positive when given player reaches the goal (passes the opponent without losing the ball and crosses conventional line which runs along the transverse axis of a football

pitch where the opponent stands and effectively acts to achieve another detailed objective, e.g. passing the ball to another player who objectively may continue to attack). Ineffective offensive act in situation **1↔1** involves loss of the ball due to mistake committed by oneself (including a foul which ends with an intervention of a judge) or defensive actions of an opponents as well as failure to cross the aforementioned conventional line (continued possession of the ball and even its effective passing to another player towards one's goal or transverse to the football pitch are not classified as offensive actions – these are the examples of effective preparatory actions).

Individual offensive actions of a player in situation **1⇔G** are assessed as positive when he achieves the objective in accordance with the criteria of "one against one" situation, however as if multiplied. Passing by at least two players from the opponent team in a short time, such player usually achieves important intermediate goals (he achieves superiority in number and/or gains a significant part of a football pitch), which greatly increases the probability of scoring a goal. Obviously, the group attacked seeks to baffle such attempts, that is it defends oneself, counter-attacking or counteracting such actions in another manner. This may be performed by each player individually or by the entire team at the same time, which increases the difficulty of achieving the objective by the player who undertook an individual offensive action.

Positive assessment of situation ⊗ is not linked with the criterion of crossing the conventional line referred to above. The encounter effectiveness is described by two criteria: either getting the ball and taking immediate individual attack or passing a ball to another player regardless of his the football pitch in such a way that he can take effective preparatory actions or attack.

For the purposes of the study, each player participating in the match in given position (in each of the three formations) was assigned a specific code: D1 right defender, D2 centre-right defender, D3 centre-left defender, D4 left defender; M1 right midfielder, M2 centre-right midfielder, M3 centre-left midfielder, M4 left midfielder; S1 right striker, S2 left striker.

Calculated indicators for the player of given formation and position are collective when the player of given formation was substituted for a reserve player during the match. Individual effectiveness of such players may be estimated in more detailed scientific analysis, but it should be mainly performed by a coach for the purposes of training the team.

The study itself was preceded by primary validation procedure. All persons among 6 experts (3 soccer coaches of the championship class and 3 coaches of the first league with long professional experience and large experience in training soccer players) agreed that detailed definitions of a game in analysed situations reflect such events and have great cognitive and application value from the perspective of improving game quality. At least 4 positive opinions of these experts (the so-called competent judges) who assessed the same action of a player (assessment of the highest rank) while observing recorded games during the 2006 World Cup, the 2008 European Championship and the 2012 European Championship, were assumed as the basis to categorise validity.

Afterwards, three experts who assessed the actions in the most accurate manner during example test which involved observation of a game between Poland and Germany during qualifications to the 2006 World Cup, evaluated the reliability of the observation test [15, 17]. Reliability of data gathering on the basis of the correlation index in a parallel test amounted to: 0.88 for **1↔1** actions; 0.92 for **1⇔G**; 0.91 for ⊗. Re-test accuracy (after 2 weeks) amounted to: 0.91; 0.96; 0.90, respectively [15]. Thus all indicators meet the reliability criteria (r of at least 0.80 [18]).

Particular individual offensive effectiveness indicators (OAO for **1↔1**, OAG for **1⇔G,** EE for ⊗) were calculated on the basis of the proportion of effective actions in given category to the number of undertaken action of this category throughout the entire game. Observation sheets for „Individual offensive action" were used to present the results of own studies (Tables 1 to 4).

Secondary analysis of these indicators based on criterion of struggle dynamics measurement (according to the theory of combat sports [19, 20]) was applied in order to develop personal profiles broken down into formations (defenders, midfielders, strikers). Two indicators of personal offensive dynamics were calculated: individual offensive activity (IOA); individual offensive effectives (IOE) and Index POD (personal and formation).

$$IOA = \frac{\text{the sum of individual offensive actions}}{30}$$

sit or stand, and any associated buildings football pitch [35].

Football pitch – *noun* the rectangular field on which football is played [35].

Header – in soccer: a shot or pass made by hitting the ball with your head.

Defender – *noun* **1**.a player whose role is to try to prevent the opposition from scoring or getting into a scoring position **2**. the holder of a title that is being challenged [35].

Match – *noun* **1**. a contest between opponents, especially a sporting contest **2**. somebody or something capable of competing equally with another person or thing [35].

Martial arts – *plural noun* any of various systems of combat and self-defence, e.g. judo or karate, developed especially in Japan and Korea and now usually practised as a sport [35].

Motor safety – is consciousness of the person undertaking to solve a motor task or consciousness the subject who has the right to encourage and even enforce from this person that would perform the motor activity, who is able to do it without the risk of the loss of life, injuries or other adverse health effects [34].

Tai-sabaki – body movement [30].

Ashi-sabaki – footwork. The most common form of footwork seen in the various *budō* is *suri-ashi* in which the practitioner slides smoothly across the floor. Other conventional forms of footwork include *ayumi-ashi*, *okuri-ashi*, *hiraki-ashi*, *and tsugi-ashi* [30].

where: 30 is an agreed number of 3-minute game sequences during the actual duration of the match (analogous to 30 10-second sequences during judo fight which is not finished before the regulatory time passes [19, 20]; if the numerator's value exceeds 30, IOA value amounts to 1.

$$IOE = \frac{OAO + OAG + EE}{3}$$

$$\text{Personal Index POD} = \frac{IOA + IOE}{2}$$

$$\text{Formation Index POD} = \frac{\text{the sum of personal Index POD the soccer team formation}}{\text{number of soccer players' formations}}$$

Statistical analysis

The following standard statistical means were applied: arithmetic mean, standard deviation, minimum and maximum. Differences between particular data were calculated with the use of t-Student test. The minimal level of actuality was established at $p<0.05$.

Results

In both matches observed, all soccer players participated in encounters. However the proportions related to participation of players from both teams are not the same. During the game in 2006, Polish soccer players participated 47 times (Table 1), whereas German ones 39 times (Table 2). This means that in situations ⊗ one German soccer player more often fought for a ball with at least two Polish soccer players. During the game in 2008, Polish soccer players participated 48 times (Table 3) and German 49 times (Table 4). Thus, encounters of one player from each opposing team were prevailing.

In 2006, individual offensive actions "one against one" were undertaken by more German soccer players (80%) than Polish ones (40%). In 2008 this number amounted to 70% at both teams. The struggle "one against group" was undertaken by more German soccer players: 60% in 2006 and 70% in 2008, whereas Polish soccer players: 40% and 30%, respectively. The number of individual offensive actions was during both matches higher in German team: 72 in 2006 and 80 in 2008. In Polish team it amounted to: 63 and 66, respectively. Difference between the teams increased from 12.5% to 17.5%.

German soccer players showed higher effectiveness of individual offensive actions. During a qualifying match in the 2006 World Cup, statistically significant difference ($p<0.01$) relates to OAG, whereas during a qualifying match in the 2008 European Championship it relates to OAO and EE ($p<0.01$).

Differences in individual fitness level of the soccer players from both teams are shown by the indicators of personal offensive dynamics: IOE ($p<0.01$) and personal Index IOD ($p<0.05$) in 2006 and both indicators $p<0.01$ in 2008. The highest personal Index IOD of Polish soccer player (M4) amounts to 0.428 (Table 1), while seven of German soccer players exceeded 0.500: D3, M4, S1, S2 (Table 2) and D1, S1, S2 (Table 4).

Individual offensive effectiveness reflects these differences to even a greater extent. No Polish soccer player reached 0.500 IOE, while mean IOE of German team amounted to 0.544 in 2006 (Table 2) and 0.565 in 2008 (Table 4). The greatest value of IOE (S2) amounted to 0.916 with 7 individual offensive actions (Table 2).

The highest individual offensive action (IOA = 0.500 which means that 15 such actions were undertaken every 6 minutes) was shown by German right defender (D1) during the game in 2008. However, the effectiveness of such actions (IOE) amounted only to 56% (Table 4). During the game in 2006, German striker (S1) undertook 12 such actions every 7.5 minutes (IOA = 0.400) with 80% effectiveness (Table 2). The highest effectiveness of action (EOA = 0.916) was shown by German striker (S2) during the same match, however with lower number of individual offensive activities undertaken (IOA = 0.233).

Discussion

The study results showed that encounters are the most frequent individual offensive actions during a game. They involved participation of all players (goalkeepers were not included in the analysis), whereas Polish soccer players took part in them more frequently (95 times in both matches, which accounts for 74% individual offensive actions undertaken by them). German

soccer players took part 88 which with 152 individual offensive actions amounts to 58%. Thus, "body-body" contact of at least two soccer players of opposite teams occurred more often than every two minutes. Moreover, taking into account that situations **1↔1** and **1⇔G** involve "body-body" contact (e.g. when an opponent makes a slide), the team whose soccer players often undertake individual offensive actions has to reckon that such situation may occur every minute.

Decades ago, Professor Stanislaw Tokarski (outstanding judo athlete – he won the first gold medal for Poland in the Academic Championship in Judo, Delft, The Netherlands, 1964 [21]) noted that "(...) numerous judo techniques are used on the mat and on the pitch. The difference lies in the fact that they are forbidden during a soccer match and recommended during a judo match [22, p. 98]. At the end of the seventies, Tokarski worked as a martial arts consultant and participated in preparations of the Polish national football team for the World Cup. He recollects: "For several weeks I included the elements of hand-to-hand fighting in the training sessions of coaches Gmoch, Piechniczek and Streilau. This experiment was not only of a psychological importance as a type of physical therapy and due to its highly practical use. It was not only about safe falling skills necessary in various types of intended and unintended collisions on the pitch (...) and the ability of hand-to-hand fighting useful in frequent situations involving aggression of fans after the games but also about a certain knowledge about fouls allowing them to protect themselves from them. One soccer player asked for the purpose of self-defence training before the World Cup showed the pitch with his hand. Assuming his perspective, I watched further games and saw a vast number of collisions, intended or unintended as well as various ju-jitsu techniques performed without the use of hands" [23, p. 97-98].

Even ordinary observation of contemporary football matches leads to a conclusion that a consent to the brutalization of encounters becomes more and more frequent. Soccer players very often strike themselves with their hands while jumping to the ball (when they seek header). Referees award yellow cards only when an encounter leads to an injury or an elbow strike is extremely brutal. Therefore, it is necessary to include elements of martial arts in the traditionally conceived training in a much greater extent than it was done by Stanislaw Tokarski [22] nearly half a century ago. Many motor activities of contemporary soccer players involve not only "ju-jitsu techniques performed without the use of hands" [22]. It often includes hand-to-hand fighting with grasping opponent's shirt, shorts, arms along with hitting head and torso mostly with the arms. It is difficult to regard an attack of opponent's legs with one's legs (especially during a slide) as an action undertaken precisely with such intent.

Speaking about the need of incorporating elements of martial arts into the training session of soccer players, what is meant are the exercises which will increase the effectiveness of defence against such attacks on their bodies. My opinion is that (as most coaches and scholars dealing with team games) people should observe the principle of *fair play* as well as concern about the beauty of football and positive emotions which should be provided by every sport to the highest number of people possible.

I believe that defence against unacceptable physical attack during a match should be practiced during at least one training session in a week. Training should also involve learning and improving offensive actions during a game in close contact with an antagonist (individuals and groups) in line with the regulations. Fun forms of martial arts [23, 24] and training of psychomotor adaptation based on soft technique of self-defence [25, 26] may turn out to be very useful. It is justified to recommend these exercises as permanent or frequent elements of a warm-up. It is reasonable to incorporate small-sided games [6, 8, 27-29], certain martial arts techniques in particular (e.g. *tai-sabaki* used in judo or *ashi-sabaki* – form of footwork seen in the various budo [30]).

At the stage of initial training (as early as possible) young soccer players should be taught the skill of safe falling and collision with vertical obstacle. The study results provide empirical proofs that such skills systematically improved may ensure more effective steering with one's body during a collision with hard ground or a wall by a person aged 65 compared to a 24-year-old [31, 32]. These attractive training measures (formal exercises and fun forms of martial arts) are very important from the perspective of increasing motor safety of each soccer player regardless of age and sport competencies.

Opportunists and sceptics may find interesting the work of outstanding Japanese expert, professor Fumiaki Shishida which addresses a subject of judo's techniques performed from a distance [33]. The author shows motor and mental potential not only of judo, which is not commonly known. In my opinion, courageous and thoughtful use of practical and theoretical solutions of a new sub-discipline of the science of martial arts [13] may result in numerous surprising and positive effects also

in the area of football's theory and practice. On the other hand, theory of combat sports – as detailed theory of agonology [14] – provides inspiration for more thorough adaptation of the measure of combat dynamics [19, 20] to evaluation of individual activity exhibited by a soccer player taking into account all actions undertaken during the match (also as part of team's action) .

Conclusions

Profiles of individual soccer players are the empirical basis for the development of individual training programs. With the profiles of soccer players from the opposed team it is possible to develop tactics for limiting the effectiveness of leaders during an encounter, "one against one" and in close contact with an antagonist and a group of players.

Conflict of interest

The author declares that they have no conflict of interest.

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Table 1. Indicators of individual offensive actions and individual offensive dynamics of Polish soccer players in the qualifying match against Germany during the 2006 World Cup (0 : 1)

Formation	Individual offensive actions						Offensive action n = 63	Indicators of personal offensive dynamics			
	1 ↔ 1		1⇔G		⊗			IOA	IOE	Index POD	
	n = 7	OAO	n = 9	OAG	n = 47	EE		Personal		Personal	Formation
D1	0	0	0	0	**5**	**0.6**	**5**	**0.166**	**0.200**	**0.183**	**0.179** ±0.021 15% ÷ 20%
D2	0	0	0	0	**2**	**1**	**2**	**0.066**	**0.333**	**0.199**	
D3	0	0	0	0	**7**	**0.42**	**7**	**0.233**	**0.140**	**0.186**	
D4	0	0	0	0	**5**	**0.4**	**5**	**0.166**	**0.133**	**0.149**	
M1	**1**	**1**	**3**	**0.33**	**7**	**0.14**	**11**	**0.366**	**0.490**	**0.428**	**0.260** ±0.149 11% ÷43%
M2	**0**	**0**	**0**	**0**	**4**	**0.25**	**4**	**0.133**	**0.083**	**0.108**	
M3	**1**	**0**	**0**	**0**	**4**	**0.5**	**5**	**0.166**	**0.166**	**0.166**	
M4	**2**	**0.5**	**3**	**0.33**	**5**	**0.2**	**10**	**0.333**	**0.343**	**0.338**	
S1	3	0.33	1	0	**4**	**0.25**	**8**	**0.266**	**0.193**	**0.229**	**0.227** 22% ÷ 23 %
S2	0	0	2	0.5	**4**	**0.25**	**6**	**0.200**	**0.250**	**0.225**	
	Only active						**Everybody**				
X	**1.75**	**0.46**	**2.25**	**0.29****	**4.7**	**0.4**	**6.3**	**0.213**	**0.233****	**0.220***	**average**
SD	0.957	0.361	0.829	0.181	1.494	0.255	2.750	0.098	0.123	0.095	SD
min	1	0%	1	0%	2	14%	2	7%	8%	11%	minimum
max	3	100%	3	33%	7	100%	11	37%	49%	43%	maximum
%	**40**		**40**		**100**		**100**				proportion

*p<0.05 **p<0.01 statistically significant differences relative to the German team

Table 2. Indicators of individual offensive actions and individual offensive dynamics of German soccer players in the qualifying match against Poland during the 2006 World Cup (1 : 0)

Formation	Individual offensive actions						Offensive action n = 72	Indicators of individual offensive dynamics			
	1 ↔ 1		1⇔G		⊗			IOA	IOE	Index IOD	
	n = 18	OAO	n = 15	OAG	n = 39	EE		Personal		Personal	Formation
D1	0	0	0	0	**4**	**0.5**	**4**	**0.133**	**0.166**	**0.149**	**0.259** ±0.227 2% ÷ 54 %
D2	**2**	**0.5**	0	0	**3**	**1**	**5**	**0.166**	**0.500**	**0.333**	
D3	**2**	**0.5**	**1**	**1**	**6**	**0.83**	**9**	**0.300**	**0.776**	**0.538**	
D4	0	0	0	0	**1**	**0**	**1**	**0.033**	**0.000**	**0.016**	
M1	**3**	**0.66**	**2**	**0,5**	**5**	**0.6**	**10**	**0.333**	**0.586**	**0.459**	**0.426** ±0.133 25% ÷ 57 %
M2	**3**	**0.33**	0	0	**4**	**0.5**	**7**	**0.233**	**0.276**	**0.254**	
M3	**2**	**0.5**	**2**	**0,5**	**5**	**0.6**	**9**	**0.300**	**0.533**	**0.416**	
M4	**3**	**0.66**	**2**	**1**	**3**	**1**	**8**	**0.266**	**0.886**	**0.576**	
S1	**2**	**1**	**4**	**0.75**	**6**	**0.66**	**12**	**0.400**	**0.803**	**0.601**	**0.587** 57% ÷ 61%
S2	**1**	**1**	**4**	**0.75**	**2**	**1**	**7**	**0.233**	**0.916**	**0.574**	
	Only active						Everybody				
X	**2.25**	**0.64**	**2.5**	**.75****	**3.9**	**0.75**	**7.2**	**.240**	**.544****	**.392***	**average**
SD	0.707	0.243	1.225	0.224	1.663	0.500	3.190	0.106	0.314	0.200	SD
min	1	33%	1	50%	1	0%	1	3%	0%	2%	minimum
max	3	100%	4	100%	6	100%	12	40%	92%	60%	maximum
%	**80**		**60**		**100**		**100**				proportion (%)

*p<0.05 **p<0.01 statistically significant differences relative to the Polish team

Table 3. Indicators of individual offensive actions and individual offensive dynamics of Polish soccer players in the qualifying match against Germany during the 2008 European Championship (0 : 2)

Formation	Individual offensive actions						Offensive action n = 66	Indicators of individual offensive dynamics			
	1 ↔ 1		1⇔G		⊗			IOA	IOE	Index IOD	
	n = 14	OAO	n = 4	OAG	n = 48	EE		Personal		Personal	Formation
D1	**1**	**0**	0	0	**4**	**0.5**	5	**0.166**	**0.166**	**0.166**	**0.151** ±0.034 10% ÷ 18%
D2	0	0	1	0	**6**	**0.5**	7	**0.233**	**0.166**	**0.199**	
D3	0	0	0	0	**3**	**0.33**	3	**0.100**	**0.111**	**0.105**	
D4	0	0	0	0	**4**	**0.5**	4	**0.133**	**0.166**	**0.149**	
M1	**1**	**0**	0	0	**6**	**0.5**	7	**0.233**	**0.166**	**0.199**	**0.247** ±0.045 20% ÷ 34%
M2	**2**	**0**	0	0	**8**	**0.25**	10	**0.333**	**0.083**	**0.208**	
M3	**2**	**0.5**	**1**	**0**	**3**	**0.33**	6	**0.200**	**0.276**	**0.238**	
M4	**4**	**0.25**	**2**	**0.5**	**5**	**0.2**	11	**0.366**	**0.316**	**0.341**	
S1	**2**	**0**	0	0	**5**	**0.2**	7	**0.233**	**0.066**	**0.149**	**0.227** 15% ÷ 22%
S2	**2**	**0.5**	0	0	**4**	**0.25**	6	**0.200**	**0.250**	**0.225**	
	Only active						**Everybody**				
X	**2.00**	**.18****	**2.00**	**0.25**	**4.80**	**.36****	**6.6**	**0.216**	**.177****	**.196****	**average**
SD	1.000	0.238	0.707	0.354	**1.549**	**0.131**	2.461	0.082	0.082	0.065	SD
min	1	0%	1	0%	3	14%	3	10%	7%	10%	minimum
max	4	50%	2	50%	8	100%	11	37%	32%	34%	maximum
%	**70**		**30**		**100**		**100**				proportion (%)

**p<0.01 statistically significant differences relative to the German team

Table 4. Indicators of individual offensive actions and individual offensive dynamics of German soccer players in the qualifying match against Poland during the 2008 European Championship (2 : 0)

Formation	Individual offensive actions						Offensive action n = 80	Indicators of individual offensive dynamics			
	1 ↔ 1		1⇔G		⊗			IOA	IOE	Index IOD	
	n = 20	OAO	n = 11	OAG	n = 49	EE		Personal		Personal	Formation
D1	5	0.8	2	0	8	0.87	15	0.500	0.556	0.528	0.418 ±0.082 33% ÷ 53%
D2	2	1	2	0	3	0.66	7	0.233	0.553	0.393	
D3	0	0	2	0.5	5	0.8	7	0.233	0.433	0.333	
D4	0	0	1	1	4	1	5	0.166	0.666	0.416	
M1	0	0	0	0	3	1	3	0.100	0.333	0.216	0.318 ±0.069 22% ÷ 37%
M2	2	0.5	0	0	4	1	6	0.200	0.500	0.350	
M3	2	1	1	0	4	0.5	7	0.233	0.500	0.366	
M4	4	1	0	0	4	0.25	8	0.266	0.416	0.341	
S1	3	0.66	1	1	8	0.75	12	0.400	0.803	0.601	0.605 60% ÷ 61%
S2	2	1	2	1	6	0.66	10	0.333	0.886	0.609	
	Only active						Everybody				
X	2.86	.85**	1.47	0.50	4.9	.75**	8	0.266	.565**	0.415**	average
SD	1.215	0.205	0.535	0.500	1.853	0.243	3.496	0.117	0.174	0.126	SD
min	2	50%	1	50%	3	25%	3	17%	33%	22%	minimum
max	5	100%	2	100%	8	100%	15	50%	87%	61%	maximum
%	70		70		100		100				proportion (%)

**p<0.01 statistically significant differences relative to the Polish team