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**DOCTORAL THESIS – ABSTRACT**

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***INFORMATION EXPLOITATION FORMS PROVIDED BY  
CLICK & SCOUT PROGRAMME IN THE TRAINING OF  
VOLLEYBALL TEAMS – FIRST DIVISION***

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The doctoral thesis titled “**INFORMATION EXPLOITATION FORMS PROVIDED BY CLICK & SCOUT PROGRAMME IN THE TRAINING OF VOLLEYBALL TEAMS – FIRST DIVISION**” is structured on three parts, comprising **11** chapters, **76** subchapters, **146** tables and **106** graphs.

The effective training of high-performance teams is conditioned by the preparation and development of some programmes with a content fit for the declared goals, which can be reached only to the extent their authors benefit of the required data and proper logistic means in order to make such data operational by extrapolating them from theoretical field in modern sporting coaching practice.

Based on such considerations, we can allege that the topic chosen by us is a timely one, as well as that the training and contest performance is closely linked to the introduction, development and ongoing improvement of information-statistical means and techniques and their permanently inclusion within the training programmes.

**PART I** of this thesis, titled “**CONCEPTUAL ASPECTS, TIMELY NATURE OF THE TOPIC AND CRITICAL ANALYSIS OF ITS REFLECTION IN THE RELEVANT LITERATURE**”, shows our attempts to prove that it must be found the most effective coach session planning methods, susceptible to take into consideration the organizing-methodological action of the workload over the athlete body in correlation with a good technical-tactical, physical, psychological and theoretical training. In such context we tried to systematize, summarize and present a varied scientific material, containing much information from the advanced and modern volleyball game, under the form of a uniform theory, as it follows:

✚ Volleyball is presented as a streak of distinct moments, concretized in a sequence of individual actions and in the possible relations amongst such actions, which virtually form, according to the older handbooks, the game technique and tactics, each of the components and their related practical actions developing between some limits established by a regulation.

✚ The performance athletic activity specific to the volleyball game, as human exploitation and affirmation form, both requests and reflects, through the exceptional situations created, the high level of perfection reached by the modern athletic coaching in volleyball, among other athletic disciplines.

✚ If obtaining competitive results at internal and international levels is wanted, such results require always reference to the most recent studies in the field, preparation of new methodologies and training technologies, proper for the general

requirements, arising from the current performance level and its foreseeable dynamics.

✚ As the information technology continues its development and the statistic software specific for sporting games appears and permanently updates, the need for readjustment of the insights over what is possible and what is efficient in the competition and athletic coaching practice is to be expected.

✚ Taking into consideration the aforementioned, we consider advisable the use of the Click & Scout software, able to monitor (to record, analyze and assess), by using a tab, the execution of players and team in the official games, as well as to contribute with data and information in the optimization of the special volleyball game training, in order to introduce the statistical software in the training of the high-performance athletes in our country.

**PART II**, titled *”Preliminary studies on the role of CLICK & SCOUT programme in the objectifying of the technical and tactical requirements specific for the volleyball game”*, aims to obtain, in real time, true information on the technical attack, serve reception and serve elements executed by the players of “CSU Medicina” Tîrgu Mureş team during the first half of the National Volleyball Championship 2013 – 2014, by using the Click & Scout software, to be exploited by the head coach during the game development but also in the training sessions planning in order to increase the efficiency of the technical and tactical actions.

### **Research Hypothesis**

*Processing, analysis and interpretation of the information provided by the Click & Scout programme, as computer-assisted activity mean, shall lead to the determination of the effectiveness of the individual and team attack and defence actions in the official games.*

### **Research Organization**

The study was carried out within the National Center of Excellence for Feminine Volleyball of Tîrgu Mureş.

The study extended on a 4 months period, during the first half of the National Volleyball Championship 2013 – 2014, being carried out on a sample of 14 subjects, who are female volleyball players legitimated at CSU ”Medicina” Tîrgu Mureş.

***Research Methods Applied***

*In carrying out this study, the following methods were used: the documentary method; the observation method; the experiment method; the mathematical-statistical method; the graphic method.*

***CONCLUSIONS OF PART II:***

✚ The systematized data, obtained following the use of statistic programmes and their processing, have created a new framework for the current practical training process analysis, preparation and management. It is and always will be the duty of such systemic thinking to identify all the factors which condition the planning and performing of the coaching programme. Thus, the training pattern concept could be define as a set of quantifiable indicators, whose data and simple ratios allow a characterization and essentiality shaping for the whole coaching process oriented in its programming to reaching a pre-established performance level (record, title, top place, points, victories) at a foreseen data.

✚ Following the analysis of the matches, the most worrying observation is the lack of force in attack, more precisely the lack of effectiveness in the execution of the hit, which can be improved by the reshaping of the physical training session and the inclusion of new exercises in the coaching programme.

✚ As in the matches of the poorer teams many attack errors have been observed, we suggest finding and application of new coaching means aiming precisely the removal of some of those errors.

✚ In the same matches we also found, following a statistical analysis, the fast loosing of concentration by the team, which follows the game scheme practiced by the opponent team, such deficiency being possible to be improved by a technical coaching session preliminary to the match.

✚ For the serving, we found many errors and the reduction in number of such errors could give more opportunities to the team in the matches against teams comprising stronger athletes in terms of performance.

✚ For the serving, we also believe that we can reach a better activation of the muscle groups to be contracted during the execution, by including physical training exercises in the coaching programme, mainly dedicated to the work with such muscles, converting the better muscle activation into an additional weapon, to improve the number of direct points.

✚ The serve reception was the element working the best in this first half of the Championship, clearly observed based on the statistical analysis of each game, the libero and the second row players fulfilling very well their tasks, which means a

good work for this element, the relevant coaching programme being fit to remain unchanged.

✚ The only lack observed at this chapter of serve reception is the number of errors made by the player KO, who recorded the poorest individual percentage, inducing us the idea that an additional coaching programme is required for this player, with a special customized content.

✚ ***In such context, we can affirm that the research hypothesis is confirmed.***

**PART III**, titled **”EXPERIMENTAL STUDY ON THE EXPLOITATION FORM OF THE INFORMATION PROVIDED BY THE CLICK&SCOUT PROGRAMME IN THE COACHING PROGRAMME FOR THE VOLLEYBALL FEMALE PLAYERS”**, concerns the *exploitation of the statistical information provided by the Click & Scout software, to increase the effectiveness of the performance conduct of CSU Medicina Tîrgu Mureş team during the second half of the National Volleyball Championship 2013 – 2014. The Click & Scout software provides in real time the technical-tactical information on the (individual and team) playing conduct both of the own team and opponent team in terms of location in the field, team locations for the serve reception during each tour, attack and defense organization systems, so that the head coach could properly lead the playing tactics of his/her own team and efficiently counter the playing scheme of the opponent team.*

### **Research Hypothesis**

1. *The improvement of the serve and technical-tactical attack actions shall lead to victory in competition.*
2. *The improvement of the defense schemes shall lead to the increase of the attack effectiveness by a better exploitation of the middle players.*
3. *Using the information provided by the Click & Scout programme in leading the athletic training, statistically significant individual and collective progress trends shall be obtained.*

### **Research Methods Applied**

In carrying out this study, the following methods were used: the documentary method; the observation method; the experiment method; the mathematical-statistical method, consisting of analyzing and comparing, by using the descriptive statistics (mean, standard deviations and variability coefficient calculations) and the inferential statistics (”t” Student Test, Mann-Withney Test, Wilcoxon Test, effect size, Pearson correlation, determination coefficient), the results obtained

from the recording of the turn and return matches in the National Volleyball Championship; *the graphic method*.

### **Research Organization**

The study was carried out within the National Center of Excellence for Feminine Volleyball of Tîrgu Mureş.

The study extended on a 4-months period, during the second half of the National Volleyball Championship 2013 – 2014, being carried out on a sample of 16 subjects, who are female volleyball players legitimated at CSU "Medicina" Tîrgu Mureş.

To highlight the "*Exploitation of information obtained by using the statistical Click & Scout software in the tactical coaching of the female volleyball players in Division A*", we presented the planning sequences prepared based on the information provided by the match reports made by the Click & Scout programme, which concern the players' execution in terms of effectiveness of the technical skills of the attackers, game coordinators, libero players, as well as of the entire team. To reveal the difference between the Championship turn action effectiveness and the Championship return action effectiveness we have applied the Test Z.


To determine the correlations between the effectiveness of a given playing position/technical skill and final score, we have used the following codification: 3 for the 3-0 score (3 minus 0), 1 for the 3-2 score (3 minus 2). We considered the clear 3-0 victory with a higher number, while the tight 3-2 victory, with a lower number. Those correlations were determined for the winning matches.

Based on the effectiveness of all the female players assigned in the three playing positions during the entire Championship, namely for the 22 stages, we could calculate the quintiles (we divided the effectiveness yield values for stages 1 to 22 into five parts), respectively 5 marks from 1 to 5.

### **CONCLUSIONS:**

The analysis of the technical – tactical conduct of the female players of the Tîrgu Mureş CSU Medicina volleyball team, by exploiting the information provided by the Click & Scout programme, highlighted the following aspects:

#### **SERVE**

 The points calculated based on the player's execution effectiveness when serving, highlighted that during the Championship Turn, the average of marks was of **2.63** points, while during the Championship Return, the average of marks was of

**3.27** points, which enable us to affirm that serve was the only technical skill where good results were recorded during the Championship Return.

✚ Inclusion of some new physical training exercises intended to develop the muscle groups, which contract during the execution, ensured additional effectiveness in execution, increasing in such manner the number of direct points obtained.

### **ATTACK**

✚ The analysis of the attack during the **22** stages of the Championship reveals the lack of effectiveness in the attack technical-tactical actions; during the Championship Turn, the average of marks was of **3.33** points compared to **2.55** points for the Return, taking into consideration the positive correlation between this skill and the obtaining of victory.

✚ We found based on the interpretation of the statistical data that the team is relaxing and does not comply with the established tactical plan when facing poorer opponents.

### **SERVE RECEPTION**

✚ The serve reception skill worked the best in this Championship, as proved by the marks obtained (an average of **3.75** points in Turn, better than the average of **3** points obtained in Return), the libero and second row players fulfilling all their tasks.

✚ The good results obtained at the serve reception could be also the effect of the transfers made before the beginning of the Championship 2013 – 2014, when the team benefited of players with very good technical skills in serve reception, which added to the proper training programme, led to the organization of an efficient defense in all stages of the Championship 2013-2014.

In terms of overall statistical average for Turn-Return, we highlight the following:

✚ Serve: a total of **1640** serves, effectiveness of **43%**, **191** errors, with an average of **12%**, **414** positive points and a percentage of **25%**, a number of **169** direct points and an average of **10%**;

✚ Serve reception: a total of **1285** receptions, effectiveness of **61%**, **106** errors, with an average of **8%**, **283** positive points and a percentage of **22%**, a number of **499** perfect receptions and an average of **39%**;

✚ Attack: a total of **2120** attacks, effectiveness of **26%**, **147** errors, with an average of **7%**, **349** positive attacks and a percentage of **16%**, a number of **874** direct points from attack and an average of **41%**.

In terms of action effectiveness – clear victory correlation, we can affirm that the attack is the technical-tactical action statistically associated with a clear victory, which ***confirms the hypothesis 1 of the study***.

The good results obtained in serve reception, attack and blocking did not concretize in efficient attack building scheme, which ***denies the hypothesis 2 of the study***.

The analysis and interpretation of the results arising from the reports for the 22 stages of the National Volleyball Championship 2014-2014, as well as the efficiency indicators, revealed significantly better results for most of the technical-tactical actions analyzed, unless the serving action. As consequence, the ***hypothesis 3 of the study is denied***, fact due, in our opinion, to the calculation of the maximum athletic condition curve for the playoff period, opinion proved as correct by the classification of the Tîrgu Mureş CSU Medicina female volleyball team on the 4<sup>th</sup> position in the National Volleyball Championship.

We can conclude that the data provided the Click & Scout programme represent a significant but not exclusive support in leading the coaching sessions and for the training and interaction levels of the players, remaining an critical factor for obtaining victory in the goal competitions.

### ***ORIGINALITY ELEMENTS***

In Part I of this thesis, we broadly present the four-play scheme (SIV), respectively passing the ball returning from blockage, followed by an attack action, subject not approached until now by our reference literature.

The way in which we analyzed and interpreted the information provided by each match report generated by the Click & Scout programme was a personal one, with immediate practical value, in our opinion.

Another contribution consists of the part of statistical analysis used, concretized in the efficiency calculation and in the efficiency-victory correlation determination for 3-0, 3-1, 3-2 scores, as well as of method to obtain the marks based on the technical attack, serve reception and serve skills effectiveness.

It must be pointed that maximization of team performance depend more and more on the method by which the coach (the technical staff) succeeds to ensure an efficient coaching for all the athletic training elements, as well as a careful follow-up during the entire informative-educational process, based on additional information objectified by the Click & Scout software assisted records.

As central focus-target, properly inclusion of all those novelty elements, alongside the traditional coaching means which proved their utility in time, into a system of means of highest effectiveness is required.