A COMPARISON OF DIFFERENT TEACHING APPROACHES AND THEIR IMPACT ON THE LEVEL OF THEORETICAL KNOWLEDGE OF VOLLEYBALL AMONG 13–14-YEAR OLD PUPILS

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Abstract
In this paper the author deals with 13 – 14 year-old pupils' theoretical knowledge of volleyball. The main method was pedagogical experiment. The evaluation was carried out using logical and mathematical-statistical methods. Through analysis of the questionnaire the author came to the conclusion that, when compared to the control group, the experimental group pupils achieved better results in the area of tactics questions. This result was of statistical significance ($p<0.05$). In the range of rules and technique questions he notes that the differences between groups were not of statistical significance ($p>0.05$).

Key words: *knowledge, teaching approaches, volleyball, pupils.*

INTRODUCTION

Physical and sports education is focused on developing pupils' competence and shaping their values and attitudes (Antala, 2009). Physical and sports education as a subject, (Antala, Labudová 2008; Bebčáková et al., 2009), focuses upon the development of key competencies: movement, communication, learning, interpersonal and attitudinal competencies. These competencies are connected to information which forms the core of a deliberate acquisition of physical activities and is the condition for a successful performance of practical activities (Korčok – Pupiš, 2006; Pivovarniček et al., 2013a,b).

In educational psychology there is a very close link between the concept of knowledge and two other terms, those of skill and habit (Ďurič, Grác, Štefanovič, 1988). Knowledge is (Průcha, 2003; Pupišová, 2013, 2014) the result of a pupil's perception, cognition, thinking, remembering, practical experimentation and life experience. Knowledge forms the central core of the curriculum (ISCED 2), and, accordingly, is the primary area for examination and evaluation of educational effectivity. Part of the curriculum is a Content standard which describes the range of information concerning games of sport a pupil is expected to acquire and on the basis of which he should develop skills and gain physical abilities. (Bebčáková et al., 2009; Lukáč – Pupiš, 2011 ; Pupišová – Pupiš, 2013). Mandigo and Holt (2004) state that one of the conditions for students to become "game-literate" is knowledge of the game and an understanding of the game itself, which allows them to anticipate how the game logically develops. Making use of physical education taught in schools (Nemec, Frontová, 2008), we need to engender in pupils a permanent and positive attitude towards physical activity, as well as facilitate the acquisition of theoretical knowledge, and this should be achieved mainly through sporting and physical activities popular and favoured among the pupils.

Generally speaking sports games and therefore also volleyball (Popelka, 2009) belong among favourite physical activities. Nevertheless, (Šimonek, 2003; Dobrý, 2006) there is a declining tendency in the level of theoretical knowledge in sports games education achieved with technical teaching methods.

Authors (Webb, 2003; Webb, Pearson, Forrest, 2006) state that by teaching sports games using the tactical approach, it is possible to achieve higher levels of pupils' participation in physical activity and to encourage them to think tactically. This statement is also confirmed by other authors (Alison, Thorpe, 1997; Blomqvist, Luhtanen, Laakso, 2001); who, in their research, make the comment that where the tactical approach of sports game teaching has been used, pupils have developed, in particular, tactical knowledge, game skills and a good comprehension of the game itself, as compared with the group using a technical (traditional) teaching approach where only game skills were improved.

Regarding this we consider it essential that we examine the level of physical skills and abilities as well as the cognitive element of the pupils' learning in physical education taught in school

and whether pupils have understood how to play the game and whether they are familiar with its components - rules, techniques and tactics (Popelka, 2011).

The objective of the paper is to compare two kinds of teaching approaches and their impact on the level of 13 – 14 year old pupils' theoretical knowledge of volleyball.

METHOD

In the research we used a two-group pedagogical experiment representing 13–14 year old pupils. In the experimental set composed of 23 pupils the tactical teaching approach was used while the control group consisting of the same number of pupils used a traditional (technical) teaching approach. The pupils attended 17 volleyball lessons in total. The experimental factor was the tactical teaching approach, which was characterized by some particularities: the use of modified games, inclusion style, guided discovery style and convergent discovery style and forms of social interaction. In our paper we deal with the results of the end level of pupils' theoretical knowledge in both the experimental and the control group. To obtain the data we used a non-standardized knowledge questionnaire consisting of 26 closed-ended questions. Questions focused on declarative knowledge (rules, technique) and procedural knowledge (tactics or, more precisely, strategy in the game). We distributed 23 questionnaires in total in the experimental group and 23 in the control group. All questionnaires were collected after completion. To evaluate the results we used the Mann-Whitney U test for independent samples, and descriptive statistics. We investigated the significance according to the standard level in use of 5% ($p < 0.05$).

RESULTS

A comparison of preliminary theoretical knowledge in both groups is presented in Table 1. According to the information provided in the table we observe that, statistically speaking, in the preliminary test of theoretical volleyball knowledge there were no significant differences ($p > 0.05$) in any range of questions.

Table 1 Comparison of preliminary theoretical knowledge in the experimental and the control group

Range of questions	*Rules*	*Technique*	*Tactics*	*Total*
Eg	43.9%	59.1%	41.6%	48.2%
Cg	40.2%	60.4%	40.6%	47.1%
M-W	0.411	0.725	0.916	0.385

Explanatory notes: Eg – experimental group, Cg – control group, M-W – Mann Whitney U test $p < 0.05$

The smallest differences between the groups were found in the range of questions focused on tactics. On the basis of analysis and comparison of questionnaire results we think that the traditional teaching approach used by teachers in the previous (seventh) year of volleyball teaching had the same effect on both groups when considering the theoretical volleyball knowledge acquired.

Comparison of the final theoretical knowledge of the experimental and the control group is presented in Table 2.

Rules

In the final questionnaire there was a difference between the groups in the range of questions focused on rules, that is a 2.3% difference in favour of the experimental group. This is not of statistical significance ($p > 0.05$), despite a certain difference being recorded in this range of questions. The experimental group had fewer correct answers to questions about the role of the "libero" player. The reason may be the fact that the experimental group pupils often played the game with a reduced number of players and therefore had to occupy the positions of all the players. Consequently they did not use the libero's position during volleyball lessons and they were not sufficiently familiar with his function in the team as a result. Regarding the acquisition of theoretical knowledge of volleyball rules, the results reported in the table show that teaching in the experimental group had the same influence on students as the teaching approach in the control group. When comparing the improvement of theoretical knowledge of volleyball rules there were not significant differences ($p = 0.330$) between the two groups from a statistical point of view.

Table 2 Comparison of final theoretical knowledge in the experimental and the control group

Range of questions	*Rules*	*Techniques*	*Tactics*	*Total*
Eg	66.7%	81.2%	76.2%	74.7%
Cg	64.4%	80.5%	54.5%	66.5%
M-W	0.549	0.699	0	0

Explanatory notes: Eg – experimental group, Cg – control group, M-W – Mann Whitney U test $p < 0.05$

Techniques

In the range of questions focused on technique there is only a slight difference of 0.7% between the groups. This difference is also insignificant statistically ($p > 0.05$). Therefore, we observe that our experimental stimulus had the same effect on levels of knowledge of game activity techniques of individuals as traditional teaching in the control group. This is in spite of the fact that traditionally oriented lessons focus chiefly on techniques of physical activity. We draw attention to the fact that at stake was only a basic knowledge of volleyball techniques with which, in our opinion, every pupil should be conversant. When comparing the improvement in theoretical knowledge of technique between the groups, there were no statistically significant differences ($p = 0.424$).

Tactics

In the range of questions dealing with the tactical aspect of the game we noticed a 21.7% difference between groups in favour of the experimental group. The percent difference is significant statistically ($p < 0.05$). After more detailed analysis, we ascertained that out of thirteen questions the experimental group was better in six. This data was significant statistically speaking. Five of the six questions were focused on whether the pupils were familiar with the position in game complex 1 and game complex 2. According to the results and after comparing the two groups we state that the control group pupils knew less about their own position while their own team were serving the ball and about the position while receiving the serve, in other words during defence in the field. These deficiencies are often encountered in practice. We think that the use of teaching styles, which go beyond the cognitive threshold, had an important role in augmenting tactical (strategic) knowledge. At each lesson the teacher asked his pupils questions. By so doing he created the conditions for thinking about specific problems. And in relation to the game the pupils developed not only technical aspects of physical activity but also the cognitive processes of game perception, thinking and decision-making in the game. After some experience with this teaching approach, the pupils were able to answer the questions correctly. We would like to point out that, even though they were not statistically significant, the experimental group pupils had better knowledge of questions concerning tactics. Teaching in the control group was more focused on how to perform physical skills, this also being, in our opinion, reflected in the answers to the tactics questions. The control group pupils often passed from preparatory exercises through game exercises to the game itself 6:6 without sufficient knowledge of all aspects of the game. In this way they were obliged to play the game according to the volleyball rules without a detailed knowledge of the game rules. When comparing the improvement of theoretical knowledge of tactics, improvement in the experimental group was statistically more significant than in the control group ($p = 0.000$).

DISCUSSION

While evaluating theoretical knowledge of volleyball, we have come to several conclusions. While pupils in both groups initially displayed an equal level of theoretical knowledge, some differences could be noted in the final analysis. According to the authors Mandigo and Holt (2004), pupils are able to play the game after having acquired theoretical knowledge and an understanding of the game, which allows them to anticipate how the game will develop. The biggest differences in theoretical volleyball knowledge were noticed between the groups in procedural knowledge (tactics, strategy). According to Psotta (2005), the tactical teaching approach is more favourable to acquisition of this kind of knowledge. This was confirmed by our results: in comparison with the control group, we noted an increase of 21.7% in correct answers in the experimental group, a fact that represents a statistically significant difference ($p < 0.05$). In total, the experimental group was significantly better in terms of statistics in six out of the thirteen questions which focused on tactics. Five of the six questions were focused on whether the pupils know where and how to stand in game complex 1 and game complex 2. Therefore, for the acquisition of theoretical volleyball knowledge we consider appropriate the use of individual forms of social-interaction when asking pupils questions as well as the use of methods which go beyond the cognitive threshold. At each lesson of

the experimental group the teacher would ask the pupils questions and in this way the pupils were obliged to look independently for optimal solutions to the problem and thus were more actively involved and engaged in the educational process. In relation to the game itself the pupils developed not only technical aspects of physical activity but also cognitive processes of game perception, thinking and decision-making in the game. After some experience with this teaching approach the pupils themselves were able to answer the questions correctly. In the range of declarative (rules, technique) knowledge, statistically speaking we observe insignificant differences ($p > 0.05$) between the two groups.

CONCLUSION

Our research has shown that both a tactical and a technical teaching approach lead to a similar level of theoretical volleyball knowledge among 13 – 14-year old pupils. We have proved that in comparison to a technical teaching approach, a tactical teaching approach has a more favourable impact on pupils mainly as concerns the acquisition of procedural knowledge. When comparing the acquisition of declarative knowledge both teaching approaches had the same impact on pupils.

Based on the research results, we can recommend some suggestions for practice:

- The use of an individual form of social interaction while asking pupils questions;
- The use of several different teaching styles during one lesson, in particular a guided discovery style, convergent discovery style and inclusion style;
- The use of exercises based on the situational context of the game.

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