

Original Article


Learning tennis skill through game Play and Stay in elementary pupils

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ABSTRACT

Zetou E, Koronas V, Athanailidis I, Koussis P. Learning tennis skill through game Play and Stay in elementary pupils. *J. Hum. Sport Exerc.* Vol. 7, No. 2, pp. 560-572, 2012. This study aimed to examine the effect of Play and Stay tennis program on learning the service skill on Elementary School pupils and the development of their satisfaction. Sixty-two (62) 5th class Elementary pupils, aged 11 years (Mean Age=11.13, SD=0.33) took part. The pupils, from four classes of two national elementary schools (two classes from each school), were divided into two groups: the experimental group which followed the Play and Stay program, and the control group which followed the traditional teaching method. The four-week course was held during the Physical Education lessons, (20 min of 3 hours/week). A quantitative evaluation was made on 10 trials at the service by each pupil. The qualitative evaluation of the technique was made (video-taping, observation, and a 5-element skill assessment) for service learning, comprising of: an initial test at the beginning, a final test at the end, and a retention test one week after completing the program without any practice. At the end of the course, all participants completed a feedback questionnaire on the level of satisfaction with the program. ANOVA repeated measures revealed significant interaction between groups and measurements for technique evaluation ($F(2,120)=30.82, p<0.01$), as well as the outcome of service skill ($F(2,120)=10.44, p<0.01$). The t-test analysis for independent samples showed significant differences between the experimental and the control group in four of the six variables on the satisfaction questionnaire. These findings indicate that the Play and Stay tennis teaching program was effective in helping pupils to learn the service skill, while simultaneously having fun and enjoying the procedure. This suggests that students will be motivated to become more involved in tennis as a sport, since enjoyment and satisfaction stimulate interest in participation. **Key words:** TENNIS, LEARNING, SKILLS, SERVICE, SATISFACTION, PLAY AND STAY

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INTRODUCTION

Tennis is one of the most popular sports worldwide. It is a fine sport which requires the player to have certain basic abilities, such as strength, speed, endurance, and skill. Played at a professional level, tennis players can, and do earn much fame and money, however, as a recreational sport, tennis offers many players the opportunity to enjoy playing a satisfying match or even to take part in tournaments. In today's world, where the need for physical activity is of particular importance, many people consider that tennis is an excellent medium to remain active and maintain a good level of health. Furthermore, not only is it a wonderful way to meet new people in a pleasant social setting, but it is also a sport that can be played for life, irrespective of one's age (Payne & Rink, 1997).

Although in general terms, tennis continues to grow in popularity, a disconcerting trend appears to have emerged in some of the countries with a long-standing tradition in the sport, where there seems to be a reduction in the number of people choosing to play tennis (Newman, 2008a). A number of explanations have been put forward to account for this, the main one being that tennis is in stiff competition with other sports, many of which are easier to learn. The main difficulty in learning tennis is that the shots are too fast for the basic abilities of starter players. Beginners often find it hard to control the ball, which has a direct consequence on their rallying ability. In addition, some tennis coaches use methods that are too difficult or inappropriate for children and rather than enticing they end up discouraging them. Not only does this lessen the attraction to the game but often learners find themselves just standing around waiting instead of playing, an added factor which causes them to lose interest. Beginners usually simply want to learn how to play the game, rather than be made to learn to do difficult or complicated techniques. And those who wish to keep fit and have a healthy lifestyle are often attracted to other sports and activities with fewer demands on motor skills.

For all the above reasons it is advisable that tennis coaches adapt their teaching methods by adopting new practices in order to both meet the contemporary needs and to help spread tennis to a wider public. The International Tennis Federation (ITF, 2008), has instigated such a program, which is called Play and Stay. It is geared to coaches and presents them with a more simplified learning procedure which modifies the sport to the needs of starter (novice) players (ITF, 2008).

The Play and Stay program is a worldwide campaign implemented in the last few years by over thirty participating nations with a long tradition in the sport (ITF, 2008). The teaching method of Play and Stay is based on the theory first developed by Payne and Rink, (1997) who, based on the model Sport and Play claims that a game, apart from fully absorbing the interest of participants, should also stimulate and encourage them to be actively involved in the activity for their entire lives. With the aim of lending support to the implementation of this theory, many studies have been conducted, such as in New Zealand (Grant, 1993), Australia (Alexander et al., 1993) and the USA (Carlson & Hastie, 1997; Hastie, 1996; Hastie, 1998; Hastie & Siedentop, 1999). Through playing a game, the players are prompted to discover and learn for themselves the skills and abilities of the sport. Basing it on their former knowledge which is coupled with the experience they gain from practice, players are individually able to build new knowledge of the sport (Griffin & Placek, 2001).

Bunker and Thorpe (Bunker & Thorpe, 1982, Spring) propose Teaching Games for Understanding as an alternative to the content-based approach whose emphasis is on very well-structured lessons. In a more student/player-centered approach, strategy and skills are combined within the context of the game. The authors support that with suitable modifications, if the demands on technique are decreased, the players

will firstly be able to understand and develop the tactical elements of the game. Building on this, they next learn to understand technique and strategy through practice, with the aim of progressing to a proper game. Tactical games have the same principles and the authors (Griffin et al., 1997), propose a variety of levels in strategy complexity, as well as a simplified model of three levels, referred to as modified games. These are: the development of the technical and tactical learning; decision-making through effective questions; and the development of skills and abilities.

Apart from the obvious fact that playing a game or a match helps players to develop their level of ability to a good standard, they also experience enjoyment and pleasure, which can lead to the possibly of wanting to continue to play the sport, even for the rest of their lives (Allinson et al., 2000; Corbin, 2002; Griffin et al., 1997). The most important aspect in these games is the strategy problems which arise that need to be resolved in order for players in general and children in particular, to be able to score, to predict the score, and to start playing again. Through the games, children learn to determine on their own the various tactical problems or the stages of the game and to discover solutions for these problems by making decisions and applying the most suitable moves and skills. The levels of game complexity (eg. strategy) can help the coach/P.E. teacher choose the complexity of the game depending on the level of the players. Supporters of this method believe that all players can participate in and enjoy a game even one that has been adapted so long as the modifications still allow for a meaningful game to take place (Ellis, 1986; Mitchell et al., 2003; Prensky, 2001). In order for this to be achieved, these games must incorporate a sufficient number of skills and abilities, rules, and players.

Kirk and MacPhail (2002) state that skills can be learnt through playing the game by: “the players inner awareness, the meaning of the game, strategic thought, the recognition of the basic points, the choice of technique, and the development of skills/abilities, as grouping of strategy and technique, as well as the performance of the given moment as a consideration of participating in the game” (p. 189).

More analytically, the philosophy of the Play and Stay program is to get players playing a game of tennis the sooner the better. The key objective is for coaches to teach the basic motor skills through a game of tennis, so that players serve, rally, and score as soon as possible, with the further aim of having fun for the duration of the learning process. The International Tennis Federation (ITF, 2008) proposes that although the teaching of technique remains an important component, coaches should first focus on starter players learning the concept of the game. Furthermore, starter players need to be given only the essential techniques and relevant tactical instruction in order to help them train better through playing the game. It is therefore, the coach’s responsibility to devise game-based lessons where the basic tennis skills are taught and there is both communication and enjoyment. With the Play and Stay program the coach organizes activities and exercises which are appropriate for the enhancement of motor skills and at the same time fun for starter players who from the very first lesson learn to serve, rally, and score.

During the coaching session, slower balls (red, orange, and green) should be used with both children and adult beginners, while different sized rackets courts should be used specifically for children learners. The different types of balls have the ability to absorb the impact and power of the hits making the balls slower and giving starter players more time to control their hits thus enabling them to rally. In addition, the use of smaller rackets and reduced courts makes it easier for young players to learn to hit the ball without needing a great deal of strength as well as making it easier for them to be able to return the ball into the opposite court. In sum, in Play and Stay the important factors that help to differentiate the program from traditional teaching approaches are: slower ball, smaller racket, reduced court, teaching method, modified rules, and competitive game-based coaching (ITF, 2008). Adapting the games allows the players to practice the

various skills and make decisions under actual game conditions. The coach/P.E. teacher gives emphasis to the execution of the necessary skills, creating a situation of active learning for the players (Darling-Hammond, 1997). In addition to game playing, feedback is given and learning goals are set. Finally the Play and Stay tennis program is a mean for initiating students to the tennis sport and plays it throughout their lives.

The aim of the present study was to examine the effect of the Play and Stay program on the learning of service skill in Elementary pupils (10-12 years of age) and the development of their satisfaction with the program, which indirectly indicates their interest in their long-term participation in the game, i.e., commitment of players after program completion. This work is a part of total experiment which was evaluated the basic skills of tennis. In this study was presented only the results on learning (technique and outcome) the service skill.

MATERIAL AND METHODS

Sample

For the scope of the present study sixty-two (62) 5th class Elementary School pupils, between the ages of 10-12 years (Mean Age=11.13, SD=0.33) were participated. The pupils were from four classes of two national elementary schools (two classes from each school). Pupils who were tennis players were excluded from the study. The pupils participated in the study after having obtained written permission from their parents.

Intervention procedure

The participants were randomly divided into two groups: the experimental group (N=36, 14 boys and 22 girls), which followed the Play and Stay method; and the control group (N=28, 15 boys and 13 girls) which followed the traditional coaching method, which aimed to teach the basic skills of tennis. The study procedure took place in the Elementary schools' playground during the Physical Education lessons, i.e., 3 hours per week with duration of four-weeks. The duration of service teaching and practice were 20 min per lesson. The students in the experimental group followed the Play and Stay program, whose objective was to enable them, and in particular novice players, to serve, rally and score as soon as possible, and to have fun while playing an actual game of tennis. The control group followed the traditional teaching approach and verbal feedback. This method is based on the initial understanding of the technique of the skill, while a point-game is taking place but only when the players have reached a satisfactory level in their learning of the basic skills. At the beginning of each lesson, both groups were given the same instructions on technique of skills.

Evaluation of the procedure

Three measurements were taken. More specifically, measurements were taken of the players at the beginning in order to establish that all started at the same level (initial test). Directly on completion of the course the final measurements were taken, to note the impact of the program on the performance of the players' backhand stroke ability (final test). One week later, without students' have any practice, the retention measurement was made, to establish whether the learned skill of the service had been maintained (retention test).

Quantitative evaluation

The players executed 10 services from the backcourt line. The assessments of the children's attempts were scored as: (1=inside the court, 0 = outside the court or into the net, 10 grades=excellent).

Qualitative evaluation

Along with the quantitative evaluation, the players were video-taped and assessed on 5 factors of the technique of the service skill (10X5= 50 excellent), by two expert observers (expert tennis coaches) after having examined their inter and intra test reliability.

Evaluation of satisfaction

On completion of the course, the players of both groups filled in a questionnaire in order to evaluate the quality of the program/course given to them and their degree of satisfaction with it. The questionnaire (Alexandris, Zahariadis, Tsorbatzoudis, Grouios, 2004) consisted of closed-type items, the responses of which were on a seven-point Likert scale ranging from "strongly disagree" to "strongly agree". The questions were categorized into the following six basic groups:

- Facilities (8 items)
- Staff (6 items)
- Response (4 items)
- Reliability (4 items)
- Outcome (6 items)
- Overall satisfaction and future participation (3 items)

The questionnaires were collected by the researchers, whose presence played a determining role in providing explanations where needed.

Reliability of observers

The intra-observer reliability test was assessed with the observation and recording in one day of 5 students and the observation and recording of the same students on the following day. The coefficient correlation was high ($r=0.82$). The inter-observer reliability was also assessed between two observers (tennis coaches) with the observation and recording of the same 5 students. The coefficient correlation between their scores was relatively high ($r=0.78$).

Instruments

Concerning the equipment for the implementation of the program, two video cameras, tennis equipment (special balls, rackets, cones, lines, and special net supports for two courts), a video and a personal computer for the evaluation of the students' technique were used.

Research design

The research design of the present study was factorial in the form of (2X3). More specifically, there were two independent variables "the 2 groups" where the experimental group followed the Play and stay method and the control the traditional teaching method and "the measurements" at three stages: the initial, final and retention test. The dependent variables were the players' performance on the overall results and the technique of the service. A t-test analysis on independent samples was used for the evaluation of the degree of satisfaction.

Statistical analysis

The statistical analysis of the data was made using the program SPSS 17. Statistical significance was determined at the 0.05 level. Prior to the repeated measures analysis of variance, a Kolmogorov-Smirnov test (K-S test) on the normality of the variables and a Box's M test of equality of covariance matrices were carried out. There was a non-significant value ($p < 0.05$), which indicates that the data do not differ significantly from the multivariate normality of variables, thus parametric tests can be applied.

RESULTS

Table 1. Presents the students' physical characteristics in both groups.

Group	N	Gender		Age		Weight		Height	
		Boys	Girls	Mean	SD	Mean	SD	Mean	SD
Experimental	36	16	20	11.06	0.23	45.50	11.41	1.46	0.08
Control	26	14	12	11.21	0.42	41.64	08.92	1.42	0.06
Total	62	30	32	11.14	0.33	43.56	10.21	1.44	0.07

Initial measurements

The t-test analysis on the independent samples established that there were no significant differences between the two groups for the first measurement, which demonstrates that prior to the intervention, all participants started at the same level of service skill when both the technique and the result were evaluated.

Table 2. Initial measurements in service technique.

	Experimental N=36		Control N=26		t ₍₆₀₎
	Mean	SD	Mean	SD	
Backhand					
Technique	27.23	9.37	24.69	8.47	1.116 p=0.253
Outcome	4.84	1.6	4.21	1.93	1.415 p=0.193

Repeated measures analysis of variance was applied to the results of the measurements, (ANOVA repeated measures 2X3) (group X measurement) and the level of significance was set at $p < 0.05$.

The effect of Play and Stay on the groups' performance on the technique of service skill

Repeated measures analysis of variance (ANOVA repeated measures), (2 groups X 3 measurements), was applied to test for any possible differences between the two groups during the three measurements on the score of the service skill when technique was evaluated.

There was a significant interaction between group and measurement ($F(2,120)=30.87, p<0.01$), as well as a significant main effect of the measurement ($F(2,120)=58.47, p<0.01$), and that of the group ($F(1,60)=50.24, p<0.01$), which can be interpreted that the groups had significant differences on the three measurements on the service skill, when the technique was evaluated (Figure 1).

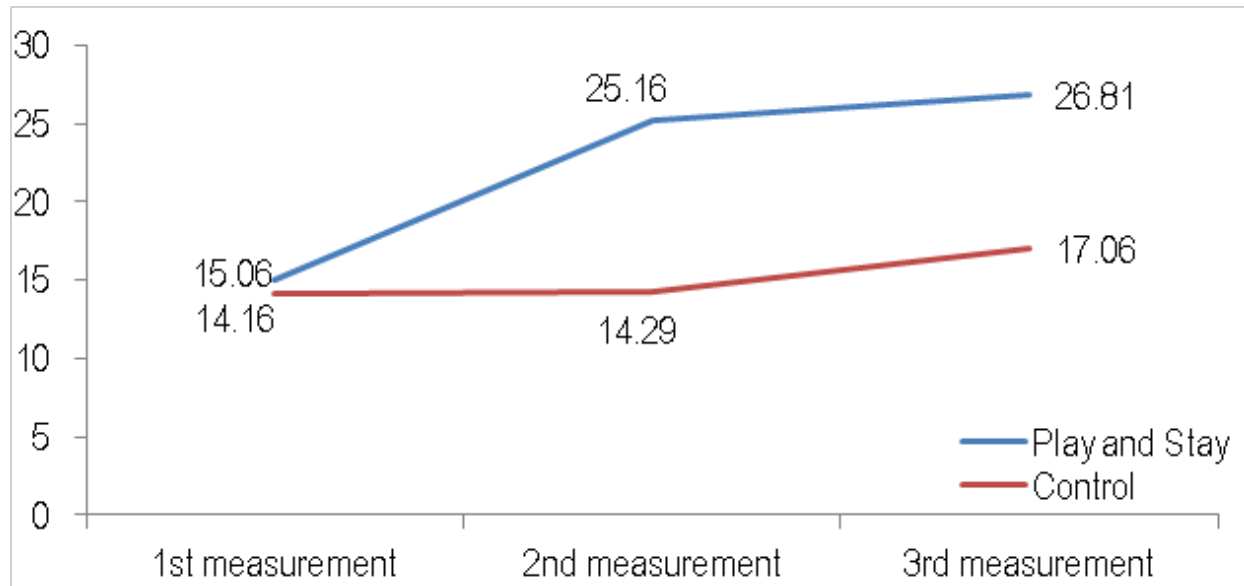


Figure 1. Both groups' service skill performance when the technique was evaluated.

The LSD analysis of multiple comparisons among the sub-dimensions of the measurements factor, showed that there were significant differences between the two groups from the first to the second measurement ($p<0.05$) and from the first to the third measurement ($p<0.05$), which can be interpreted as the experimental group that followed the Play and Stay program had significant differences in the final measurement from the scores of the control group. Between the final measurement and the retention measurement there were significant differences. The findings show that the service technique in both groups was improved. However, the experimental group had a higher performance than the control group in both the final and the retention measurements. The findings are presented in Table 3.

Table 3. Means and standard deviation of both groups on the service in the evaluation of technique.

Group	N	1 st measurement		2 nd measurement		3 rd measurement	
		Mean	SD	Mean	SD	Mean	SD
Experimental	36	15.06	5	25.16	3.7	26.81	3.23
Control	26	14.16	4.6	14.29	8.02	17.06	4.45

The effect of Play and Stay on the groups' performance on the outcome of service skill

Repeated measures analysis of variance (ANOVA repeated measures), (2 groups X 3 measurements), was applied to test for any possible differences between the participants of the two groups during the three measurements on the score of the service skill when the outcome was evaluated.

There was a statistically significant interaction between group and measurement ($F(2,120)=74.79, p<0.05$), as well as a significant main effect of the measurement ($F(2,120)=375.28, p<0.01$), and that of the group ($F(1,60)=45.77, p<0.01$), which shows that the groups had significant differences on the three measurements on the service skill, when the outcome were evaluated (Figure 2).

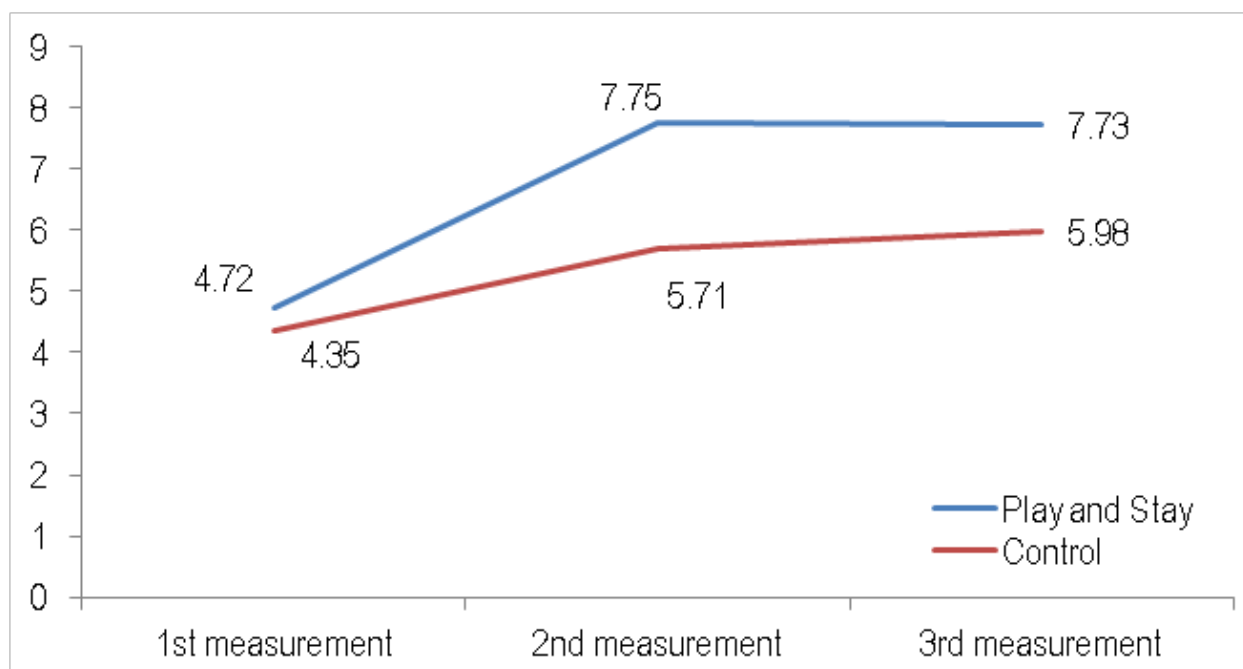


Figure 2. Both groups' service skill performance when the outcome was evaluated.

The LSD analysis of multiple comparisons among the sub-dimensions of the measurements factor, showed that there were significant differences between the two groups from the first to the second measurement ($p<0.05$) and from the first to the third measurement ($p<0.05$), which can be interpreted as the experimental group that followed the Play and Stay program had statistically significant differences in the final measurement. Between the final and retention measurements there were no statistically significant differences. The experimental group appears to have higher scores than the control group in both these measurements. The findings are presented in Table 4.

Table 4. Means and Standard deviations of players of both groups on the service skill when the outcome was evaluated.

Group	N	1 st measurement		2 nd measurement		3 rd measurement	
		Mean	SD	Mean	SD	Mean	SD
Experimental	36	4.25	0.56	7.69	1.15	7.73	0.98
Control	26	4.48	0.36	5.64	0.79	5.98	0.66

The effect of the Play and Stay program on the level of satisfaction of the two groups

T-test analysis was applied to establish whether there were any differences between the groups and the feedback questionnaire on the players' level of satisfaction. The findings showed that between the two groups there were significant differences ($p < 0.01$) only in regards to the factors "facilities", "staff", "outcome" and "overall satisfaction and future participation". There were no significant differences in the factors "response" and "reliability" ($p > 0.01$) (Table 5).

Table 5. Differences in the level of satisfaction of the students in the two groups for each factor.

Satisfaction	Experimental		Control		t
	Mean	SD	Mean	SD	
Facilities	5.70	0.70	4.10	0.85	$t_{(60)} = 7.93$ $p < .01$
Staff	5.50	0.95	4.15	0.83	$t_{(60)} = 5.87$ $p < .01$
Response	5.27	1.17	5.29	1.30	$t_{(60)} = -0.086$ $p = .932$
Reliability	5.86	0.91	5.84	0.98	$t_{(60)} = 0.61$ $p = .951$
Outcome	6.05	0.90	3.69	1.03	$t_{(60)} = 8.9$ $p < .01$
Overall satisfaction and future participation	5.50	1.03	2.93	1.36	$t_{(60)} = 8.45$ $p < .01$

The differences in the two groups are shown in Figure 3.

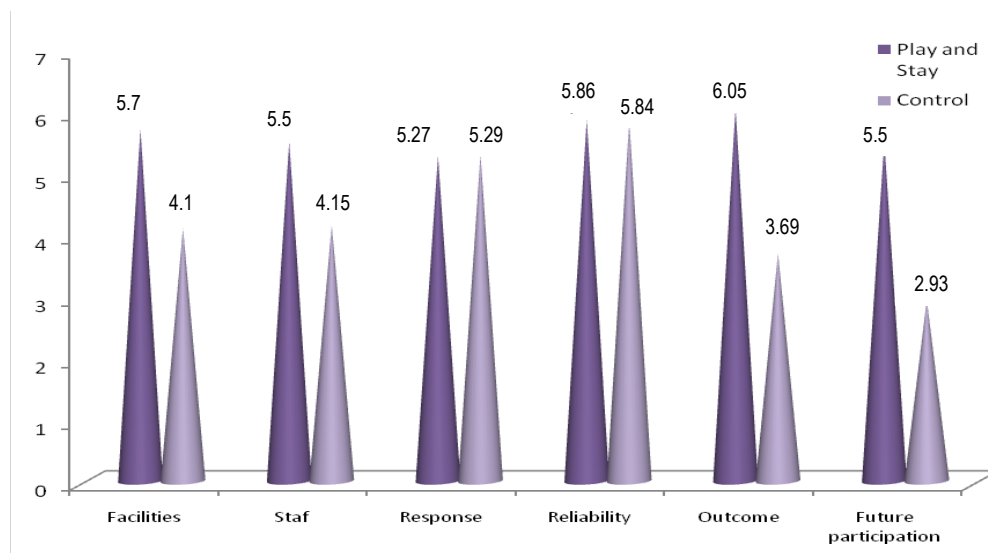


Figure 3. Both groups' satisfaction level for each factor.

The findings of the independent t-test analysis indicate that between the two groups there were significant differences ($p < 0.01$) only for the factors “facilities”, “staff”, “outcome” and “overall satisfaction and future participation”. There were no significant differences in the factors “response” and “reliability” ($p > 0.01$) (Figure 3).

Differences between the boys and the girls in their performance of the backhand skill and on their levels of satisfaction

Repeated measures analysis of variance (ANOVA repeated measures), (2 groups X 3 measurements), was applied to test possible differences between the boys and girls of the two groups during the three measurements, on the score of the service skill, when the technique and outcome were evaluated. There were no significant interaction between group and measurement ($p > 0.05$), which indicates that there were no significant differences between the boys and girls for the three measurements on service skill, when both the technique and the outcome were evaluated.

An independent t-test analysis was applied to establish whether there were any differences between the boys and girls of the two groups in each of the factors of satisfaction questionnaire. No significant differences ($p > 0.05$) were found.

DISCUSSION

The aim of the present study was to examine the effect of the Play and Stay tennis program on the service skill learning and on the level of satisfaction of Elementary school pupils.

The findings in the present study show that there was a significant difference in the three measurements in both groups, i.e., all the pupils in the two groups showed improvement in the service technique on completion of the four-week course. More specifically, although in the initial measurement taken prior to the intervention, there was no difference between the experimental and control groups on the technique of the players' service skill, in the second measurement (final test), it was apparent that the experimental group which had followed the Play and Stay program had a much better outcome than the control group. Moreover, although both groups showed improvement in the second and third measurements, the experimental group was again far better in both (final and retention tests) than the control. These findings clearly show that the Play and Stay program was much more effective in teaching Elementary school pupils basic tennis techniques, such as the service skill than traditional coaching methods.

Another significant finding was that there were no differences between boys and girls at this age. In all three measurements in both group boys and girls presented similar performance in service technique. This finding shows that the teaching of sports skills to Elementary pupils can be carried out in mixed groups, without there being any problems or either gender being at a disadvantage. This supports other studies which have shown that prior to adolescence, few or no differences appear between the two sexes in strength (Robert, 1997).

The findings of the feedback satisfaction questionnaire indicate that there were differences between the two groups for the factors “facilities”, “staff”, “outcome”, and “overall satisfaction and future participation”, whereas there were no differences between the groups for the factors “response” and “reliability”. In addition, there were no differences between the genders in the factors concerning the level of satisfaction.

In sum, novice players often have difficulty in learning tennis skills. They are not able to control the ball which means that they cannot play the game. Novice players wish to learn to play tennis quickly, instead of being taught technique. In Greece, as elsewhere, for many years traditional coaching methods have been used in the teaching of tennis skills. This, however, presents problems in getting people interested in the sport. Beginners cannot easily overcome the difficulties in technique which means that they are not able to play a game. In the last several years, this has resulted in a significant decrease worldwide in the number of people choosing to play tennis as a sport. Recreational players are attracted to other sports or activities that have fewer demands in technique and ability.

For the above reasons it is imperative that new practices be adopted to not only meet today's needs but also to increase the interest in tennis to a wider public. The International Tennis Federation (ITF) has instigated the program Play and Stay which is essentially a new and innovative teaching methodology geared to coaches, presenting them with simplified learning procedures that modify the sport to the needs of novice players of all ages (ITF, 2008a).

Finally, up to the present, no other research studies on this program appear to have been carried out indicating that further research needs to be conducted on the impact of the Play and Stay program on a variety of tennis skills and on the range of age groups.

CONCLUSIONS

To conclude, not only did the Elementary school pupils in the present study display enhanced technique and outcome in service skill as well as expressed their satisfaction and they enjoyed following the Play and Stay program and they also stated a clear intention for future participation in tennis as a sport.

APPLICATION IN SPORT

As emphasized in the literature there is a close link between games and learning, demonstrating that games provide a safe, active, and fun framework for experiential learning to take place (Zygouritsas, 2008; Prensky, 2001). Furthermore, learning through playing games has been shown to have beneficial effects on one's physical condition, motor co-ordination, mental health, as well as on one's personal and social life (Payne & Rink, 1997; Smith & Pellegrini, 2008). The findings of the present study support that the children who followed the Play and Stay program showed a greater improvement in tennis service skill, as well as a higher level of satisfaction and enjoyment in the game, in comparison to those who followed the traditional coaching method. The practical consequences and implications of the present study is that the innovative Play and Stay program should be widely adopted by tennis coaches and P.E. teachers in Greece. When people and especially children draw satisfaction and enjoyment from what they are doing, they then have the inner incentive to want to continue doing that activity or task. Coaches/P.E. teachers need to create a stimulating, encouraging learning environment and cultivate a positive approach to goal achievement in order for players, and in particular novice players to learn easily, experience personal progress, and remain interested in playing tennis for years to come. Game-based teaching, adapting equipment and lessons, free expression of tactical skills rather than strict technical control, good communication, are all major factors effectively introducing the Play and Stay tennis program, which above all, stresses that the key to success with novice players is to get them playing tennis from the very first lesson.

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