Analysis of Technical Level of Romanian Squash Players

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Abstract

Squash is a popular sport practiced around the world by millions of people. In the last few years, this sport started being played more and more in Romania. Squash is perceived as a very dynamic sport activity challenging at the same time the physical capacities and the technical skills of the players. In racquet sports, technical skills are revealed by the ability to hit a shot accurately toward a targeted area. The aim of this study was to evaluate the current technical level of the Romanian players using the Hunt Squash Accuracy Test (HSAT). Eleven male and female squash players, from 2 clubs, performed HSAT which consists of 375 shots across 13 different types of squash strokes on both the forehand (FH) and backhand (BH) side. The Romanian players (32.4 ±12.5 yo; 76.4 ±18.6 kg; 172.8 ±10.5 cm) have an experience of 9.6 (± 8.3) months and practice on average 2 times per week for about 90 (± 30) min, with a "friend". The HSAT score for Romanian players was 29.3% overall with 29.5% for FH and 24.0% for BH. The relative high percentage of shot errors (70%) indicates that Squash players in Romania are not doing specific and structured training with a specialized coach. These findings strengthen the belief that Squash is played in Romania just at amateur/leisure level.

Keywords: Performance; testing; accuracy.

1. Introduction

Millions of players are currently enjoying the squash around the world. Internationally, in countries like Australia, New Zealand, India, Pakistan, Egypt, Squash is practiced both at recreational and elite level. It was included in most "continental games" as Pan-American Games, Asian Games, Commonwealth Games, World Games and All Africa Games (WSF, 2015), but unfortunately was not accepted as an Olympic sport for the 2020 edition, Japan. In Romania squash was played for the first time at "Le Club" sports club, part of the French Village (Bucharest), in 1994, where the first squash court was built. Five years later, in 1999 when JW Marriott- World Class Health Club has been opened,

3 more Squash courts were built. In the following years, other Squash courts were opened in other cities as Timisoara, Brasov, Oradea and Arad. Today, this sport can be practiced in 15 cities from Romania, within 24 centres specialized in Squash (Horobeanu & Rosca, 2014: 5). In 2012, it was founded the first organization dedicated to players and lovers of Squash, "The Squash Association" (Federația Română de Squash, 2014), which aimed to promote Squash in Romania and bring it to a higher level of professionalism.

Since April 2014, the Romanian Federation took over the duties of Squash Association of Romania and developed and implemented the Squash officially, as part of International Squash Federation (Horobeanu & Rosca, 2014: 5).

Squash is a complete sport where player's physical capacity and technical skills are challenged on any aspect.

Squash is a part of racket sports family together with table tennis, badminton and tennis . It is played by 2 (singles) or 4 players (doubles) in a relatively closed area. The court consists of four walls and floor, being bounded by different markings. A deformable rubber ball must be hit by opponents alternately with a racquet. Players' movements are specific and repeated during each point: stops, direction changes, turns, jumps, lunges and/or side steps (Vuckovic, Struijk, & Rijkhoff, 2005). All these movements aim to position the body in a better place allowing the player to hit the ball decisively to a court area in which the opponent will have difficulty to return (Vuckovic & James, 2010).

As any other racket sport, the shot accurately it's a fundamental skills which is achieved by continuous practice during a long period of time. (Ariff, Osman, & Usman, 2012).

Winning a squash rally is achieved by placing the ball in an incommode position for the opponent. (Lees, 2003). Doing this constantly will assist in winning games and matches.

Squash is lacking in scientific literature in evaluating the shots characteristics accurately competing with other racket sport like tennis (Strecker, Foster, & Pascoe, 2011) or badminton (Sakurai & Ohtsuki, 2000).

Geoffrey Hunt, a legend of this sport has developed the "Hunt Squash Accuracy Test" (HSAT) in order to evaluate the accurately of the main strokes in squash. HSAT incorporates both, FH and BH strokes , resulting in 13 different criteria's . (Williams et al., 2014).

Being a fast grow sport in Romania, squash is passing from recreational level to performance, therefore the need of objective evaluation of current technical abilities of Romanian players was required. We consider the HSAT being the best tool to be applied for this assessment.

2. Materials and methods

2.1. Participants

For this project, 11 players volunteered - 3 females and 8 male, aged 27-58 years, members of different squash clubs from Bucharest, Ploiesti and Miercurea Ciuc. All of them signed a consensus form prior to commencing the test.

2.2. Method

The HSAT consists of 13 different types of Squash strokes, summing 375 shots on both FH and BH. The maximum number of allowed trials is detailed in Table 1 for each stroke type. These included: drives, volleys, boasts and drops. Each shot had a target area where the ball had to land to be called successful.

The utilized methodology of the assessment has been applied as per Williams et al., 2014.

Prior to commencing the test, each participant had the opportunity of trying and playing the tested shots to get a clear feeling about the requirements.

Table 1. The maximum number of allowed trials for each stroke type

Stroke Type	Trials
FH Drive Middle	50
BH Drive Middle	50
FH Drive Back	25
BH Drive Back	25
FH Volley Drive	25
BH Volley Drive	25
FH Volley Drop	25
BH Volley Drop	25
FH Boast	25
BH Boast	25
FH Drop	25
BH Drop	25
Volley Mixed	25
Total Overall Score	**375**
Overall % Score	**100**

2.3. Materials

The participants used their personal racquet, which has been used in practice and tournaments. Each individual was tested using a new Squash ball - Standard Double Yellow Dot (Competition) Ball, to avoid the ball getting worn (getting soft spots) or lost its surface (becoming shiny), which might alter its bouncing capacities.

2.4. Procedure

All subjects were tested by the same appraiser, on the same court, in a random order. The testing was done on the same day, over the duration of 6 hours (app. 35 min/participant). The environment temperature was maintained constant at 24°C ($\pm 1^{o}$) using the Club's air conditioning system. The participants were unaware of previous performances.

3. Results

The tested players (32.4 ±12.5 yo; 76.4 ±18.6 kg; 172.8 ±10.5 cm) were all right arm dominant, had an experience of 9.6 (± 8.3) months and practiced on average 2 times per week, for about 90 (± 30) min., with a "friend".

The overall HSAT score for Romanian players was 29.3%, results that are detailed in Table 2. FH shots reached their target in 30.9% of cases, while BH in only 25.2% of cases. Regarding the court position, the shots played from front of the court were 34.5% accurate, from the middle 34.1% and only 21.3% from back of the court. When taking into consideration if the ball touched or not the floor prior to shots, volleys were 34.5% accurate and only 22.6% accuracy for the bouncing shots.

Table 2. HSAT scores detailed by stroke type and shot type

Stroke/Shot	Drive down middle	Drive from back court	Volley drives	Volley Drop	Boast	Drop shot	Volley mixed
Forehand	21%	28%	44%	31%	21%	41%	65%
Backhand	17%	24%	35%	30%	17%	28%	

4. Discussions and conclusions

The study done by Vuckovic in 2010 has shown that rally winners cover less distance on average in comparison to rally losers, which suggests that a player who forces an opponent to cover a greater distance is more likely to win the game due to sending shots accurately away from opponent, put in difficulty to return the ball (Vuckovic & James, 2010). The tested Romanian players deliver only 30% of shots accurate enough to reach their targets. Considering the fact that all the shots were executed without any pressure and from a balanced and stable position, the results indicated very low technical skills for tested population.

During a rally, a player is forced to react to the pressure of the opponent and must execute defensive shots to increase recovery time and put himself in an offensive or at least equal position. This can be done by playing proper efficient shot and by having a proper posture during the game. This can be achieved only by repeated practice and training on all different shots.

The BH technique is being utilized more often then FH technique during a squash game. . This might have multiple reasons, including the fact that most of the players are right dominant and as well that left back corner is the most used area of the court. The Romanian players showed less accurate BH shots than FH, 25.2% vs. 30.9% (Fig. 1). One of the explanations might be that all of the tested players practiced other racquet sports before, i.e. tennis, badminton, where the predominant shots are FH. The BH movement in Squash has a very characteristic kinematics, it starts with the racket arm being wrapped around the neck, the elbow flexed and pronated forearm. The hit is initiated by the lateral extension and abduction of the shoulder simultaneously with the forearm supination (Behm, 1987: 10). The proper technique can be learned over time, following specialized coaching instructions especially at young ages.
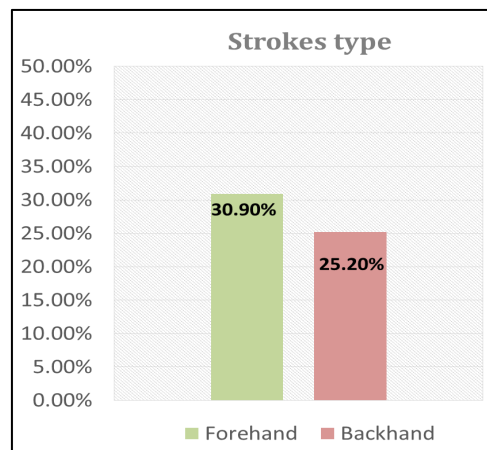
Fig. 1. Stroke type HSTA score

The court positioning was deeply studied by Vuckovic, who has shown that spending more time in "T" area (middle of the court) offers a real advantage due to the fact that all four corners can be reached in equal amount of time (Vuckovic et al., 2013). In our analyses, we found that the shots executed from back of the court had the lowest accuracy, only 21.3% (Fig. 2). This means that only one ball in five can be sent to reach a target when it is executed from behind the service box. Such shots require coordination, spatial awareness and strength, a combination that can be achieved by consistent and adequate training.
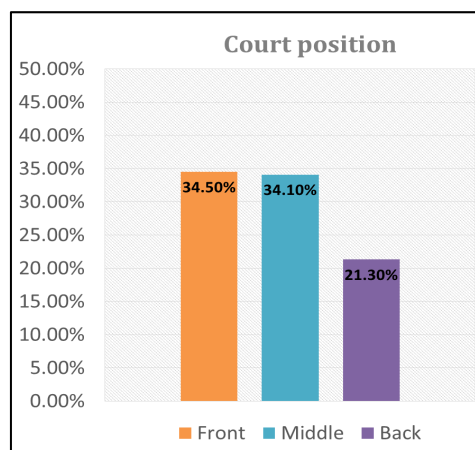
Fig. 2. HSTA score for different court positions

Front shots were executed from "in front of the service line". Middle shots were executed from the service box area. Back shots were executed behind the service boxes.

When in the middle of the court, the players can play volley strokes, an action which will increase the timing enabling the player to have a proper position for the next shot and as well will put the opponent under pressure offering him less reaction and movement time. In the present study, we found that 34.5% of volleys were accurate and just only 22.6% of the bouncing shots (Fig. 3).
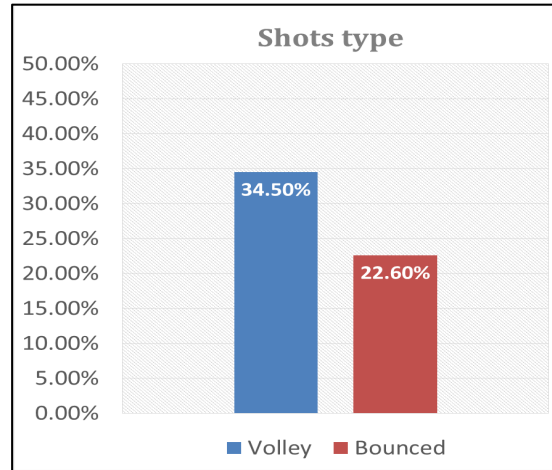
500

Fig. 3. Shot type HSTA score

Volley - the ball was hit before touching the floor. Bounced - the ball bounced off the floor prior to be hit.

Even though each point/rally is won as a result of a single shot, the shot is part of a combination of shots and tactical sequence which aims to bring the ball in the most inaccessible areas of the court for the opponent. When comparing these results with the ones of Williams, we can see that technical skills of Romanian players are low. Williams recorded an average score of 54.25% (19% to 89%), while our result was only 29.28% (18 to 40%). The importance of having specialized coaches to teach properly all technical aspects from the beginning of squash is essential. Williams' population was very different than ours, those players practicing with a coach 15 hours/week for 1.5±0.6 years. Specialized technical sessions should be introduced in the weekly schedule in order to increase the skill and shot accuracy.

Further research should be done to test a bigger number of Romanian players from different centres, who might have a bigger playing experience and implicitly better technical skills. This could be organized in collaboration with the National Championship, where all participants could be tested and the results correlate with the final place (similar design with Williams et al., 2014).

Limitations. HSAT test has been applied to amateur players, although the test is designed to be applied to highly-trained adolescent players. We consider this action due to the trend of Squash development in Romania. As well HSAT has not been tested on amateurs to see its reliability, and therefore the above results might be very different with a new testing session, so they should be carefully interpreted and not generalized.

Conclusions. The high strokes errors percentage (70%) shows the lack of technical abilities within the Romanian squash players tested. This finding might highlight the lack of specific and structure sessions given by specialized coach and as well are in close relations with their limited squash experience.

These findings strengthen the belief that Squash in Romania is played at recreation level.

References

Ariff, F. H. M., Osman, N. A. A., & Usman, J. (2012). Joint angle production during squash forehand and backhand stroke. *30th Annual Conference of Biomechanics in Sports* (pp. 264-266). Melbourne. Retreived from https://ojs.ub.uni-konstanz.de/cpa/article/viewFile/5365/4934

Behm, D. G. (1987). A kinesiological analysis of the Squash stroke. *National Strength and Conditioning Association Journal, 9*(5), 4-16.

Horobeanu, C., & Rosca, A. (2014). Squash – A (possible) Olympic sport. *Discobolul, 35*(1), 5-10.

Federația Română de Squash. (2014). *Istoric*. Retrieved from http://www.asociatiadesquash.ro/despre-noi/istoric%202014

Lees, A. (2003). Science and the major racket sports: A review. *Journal of Sports Sciences, 21*(9), 707-732.

Sakurai, S., & Ohtsuki, T. (2000). Muscle activity and accuracy of performance of the smash stroke in badminton with reference to skill and practice. *Journal of Sports Sciences, 18*(11), 901-914.

Strecker, E., Foster, E. B., & Pascoe, D. D. (2011). Test-retest reliability for hitting accuracy tennis test. *J Strength Cond Res.*, 25(12), 3501-3505. doi: 10.1519/JSC.0b013e318215fde6.

Vuckovic, A., Struijk, J. J., & Rijkhoff, N. J. (2005). Influence of variable nerve fibre geometry on the excitation and blocking threshold. A simulation study. *Med Biol Eng Comput., 43*(3), 365-374.

Vuckovic, G., & James, N. (2010). The distance covered by winning and losing players in elite squash matches. *Kinesiologia Slovenica, 16*(1-2), 44-50.

Vuckovic, G., James, N., Hughes, M., Murray, S., Sporis, G., & Pers, J. (2013). The effect of court location and available time on the tactical shot selection of elite squash players. *J Sports Sci Med., 12*(1), 66-73.

Williams, B. K., Hunt, G. B., Graham-Smith, P., & Bourdon, P. C. (2014). Measuring squash hitting accuracy using the 'Hunt Squash Accuracy Test'. *32nd International Conference of Biomechanics in Sports* (pp. 467-469). Johnson City, USA. Retrieved from https://www.researchgate.net/publication/289175636_ Measuring_squash_hitting_accuracy_using_the_'Hunt_Squash_Accuracy_Test'

WSF (2015). *WSF backs IOC plan on Tokyo 2020 sports decision timing*. Retrieved from http://www.worldsquash.org/ws/news/15498