

Effects of some Special Instruments and Multimedia on Improving the Back-Stroke Skill in Badminton

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Abstract: The current research aims to identify the effects of using special instruments and multimedia on improving the technical level of back stroke skill in badminton. The researcher used the experimental approach (two-group design) with pre- and post-measurements. Research community included all students of faculty of physical education – Jordan University. The researcher purposefully chose (46) students as a main sample and divided them into two equivalent groups. Results indicated that: - Special instruments and multimedia had positive effects on improving the performance level of back stroke in badminton. -The second experimental group (multimedia) achieved better performance on back stroke in badminton compared with the first group.

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Key words: multimedia – special instruments – back stroke – badminton

1. Introduction:

According to **Abu Nemra, M. & Saada, N** (2009), physical education is an aspect of general education that seeks to achieve its objectives through selected motor activities. The main objective is to integrate physical, mental, psychological and social aspects of the individual in a balanced process of education and growth that enables individuals to adapt to social life. The world is facing a technological revolution in all fields of life that leads us to use modern technology excessively. **Al-Dawawy** (2016) indicated that there is no one single method for teaching physical education that can be considered optimum as the best method in one place and one time may be considered unsuitable under different circumstances. There are several methods for teaching physical education and a teacher is free to choose what suites him/her according to current conditions and previous experience. Each method depends on available educational aids and instruments in addition to the nature of the topic to be taught and objectives to be achieved. Badminton is witnessing fast developments in recent years due to its positive effects on preparing individuals physically, psychologically and socially through improving their abilities and potentials in serving the society. This makes badminton a popular sport all over the world. As any other sport, badminton requires recent information to improve its basic skills. This led experts in the field to try to identify and innovate tools and instruments that may help improving such technical skills. **Al-Atawy & Sabhan** (2009) indicated that all racquet sports players should start with basic skill till mastering them. This led the researcher to try to improve motion timing of the back stroke in badminton through using special instruments (low-rebound balls – racquet arm

length – manual ball handlers – deep stroke device) and multimedia (pictures, animations and texts coordinated and presented through PC and data show).

The back stroke is a basic badminton skill and improving it serves other skills, like ball rebound, for beginners. In addition, racquet arm length may hinder the hitting arm and therefore affects learning other stages accurately. Furthermore, there are severe limitation in presenting the pedagogical part in a good manner during learning process of this skill and this limits learners' abilities to achieve the desired level. The researcher thinks that this is due to the lack of suitable educational instruments and multimedia that work on motivating learners to acquire and master the back-stroke skill. This research problem is clear in the following question:

- Is using special instruments and multimedia have positive effects on improving the technical level of back stroke skill in badminton?

Aim:

The current research aims to identify the effects of using special instruments and multimedia on improving the technical level of back stroke skill in badminton.

Hypotheses:

- There are no statistically significant differences between the pre- and post-measurements of both experimental groups on the technical performance of back stroke in badminton.

- There are no statistically significant differences between the post-measurements of both experimental groups on the technical performance of back stroke in badminton.

2. Methods:**Approach:**

The researcher used the experimental approach (two-group design) with pre- and post-measurements.

Participants:

Research community included all students of faculty of physical education – Jordan University. The researcher purposefully chose (46) students as a main sample and divided them into two equivalent groups. Tables (1) and (2) show data normality of participants.

Table (1): (t) calculated values for anthropometric variables of participants (n1=n2=23)

Variables	First experimental		Second experimental		(t)
	Mean	SD±	Mean	SD±	
Age (year)	22.135	0.987	21.384	1.556	1.505
Height (cm)	172.923	7.598	175.307	5.991	0.888
Weight (kg)	69.538	6.603	70.538	7.321	0.366

(t) table value on $P \leq 0.05$ and freedom degree of 24 = 2.06

Table (2): (t) calculated values for technical performance variable of participants (n1=n2=23)

Variables	First experimental		Second experimental		(t)
	Mean	SD±	Mean	SD±	
Back stroke	4,538	0,853	4,974	0,716	1,410

(t) table value on $P \leq 0.05$ and freedom degree of 24 = 2.06

Table (1) and (2) indicated no statistically significant differences among participants on all variables and this assures data normality.

Technical evaluation of back stroke:

The researcher used judges' opinions through video observation to evaluate the technical

performance of back stroke in badminton. Performance is videotaped and then presented to judges who award each stage of the skill certain points. The skill is divided into three parts and total mark is out of (10) as seen in table (3).

Table (3): mark distribution on each stage of the back-stroke skill according to judges' opinions

Skill	Preliminary part	Main part	Concluding part	Sum
Back stroke	4	4	2	10

To assure objectivity of evaluation, the researcher presented some randomly chosen videotaped back strokes to (3) judges and calculated correlation coefficients among their opinions. Correlation value was (0.91) assuring objectivity of evaluation.

The recommended program:

The recommended educational program included (5) units for each experimental group. Each unit was (90) minutes and the researcher applied one unit per week for each group. For each unit, the researcher identified behavioral objectives and content. Objectives and contents were validated through experts' opinions.

Pre-measurements:

The researcher took pre-measurements for both groups on 19-10-2016 before initiating the educational program.

Post-measurements:

Post-measurements were taken on 30-11-2016.

Statistical treatment:

According to **Abu Zaid, Mohamed K** (2016), the researcher used SPSS software to calculate the following: mean – SD – (t) test.

3. Results and discussion:

Table (4) indicated statistically significant differences between pre- and post-measurements of the first experimental group in favor of the post-measurement. The researcher thinks that these improvements in post-measurements are due to the use of special educational instruments including low-rebound balls and ball holders. **Hammond & Smith** (2006) and **Miller** (2005) indicated that using special instruments in teaching and training sports skills lead to mastery of these skills.

Table (4): (t) calculated values for technical performance variable of first experimental group (n=23)

Variables	Pre-		Post-		(t)
	Mean	SD±	Mean	SD±	
Back stroke	4,538	0,853	5,127	0,799	5,308*

(t) table value on $P \leq 0.05$ and freedom degree of 12 = 2.18

Table (5): (t) calculated values for technical performance variable of second experimental group (n=23)

Variables	Pre-		Post-		(t)
	Mean	SD±	Mean	SD±	
Back stroke	4,974	0,716	5,730	0,875	5,422*

(t) table value on $P \leq 0.05$ and freedom degree of 12 = 2.18

Table (5) indicated statistically significant differences between pre- and post-measurements of the second experimental group in favor of the post-measurement. The researcher thinks that these improvements in post-measurements are due to the use of multimedia with all its components (pictures – animation – video – audio – text) as these components

helped athletes to acquire and master the back-stroke skill. **Al-Sayeh** (2004), **Fadel** (2016) and **Brown** (2004) indicated that using multimedia technology enables athletes to see the progressive stages of technical performance before practice and can be used as a feedback for correcting performance errors and improving performance till mastering the skills.

Table (6): (t) calculated value for post-measurement of both groups (n1=n2=23)

Skill	First experimental		Second experimental		(t)
	Mean	SD±	Mean	SD±	
Back stroke	5.127	0.799	5.736	0.875	1.832

(t) table value on $P \leq 0.05$ and freedom degree of (24) = 2.06

Table (6) showed statistically significant differences between the post-measurements of both groups on performing the back stroke in favor of the second experimental group (multimedia) as (t) calculated value (1.832) was higher than its table value (2.06). The researcher thinks that both styles (specific instruments and multimedia) had positive effects on improving the performance level of back stroke in badminton. **Abu Nemra & Saada (2009)**, **Al-Sayeh (2004)** and **Soliman. (2016)** indicated that the use of educational technologies enhances practice and application of physical education lessons. It directs learners' attention towards what should be done and how it is done according to visual feedback.

Conclusions:

1. Special instruments and multimedia had positive effects on improving the performance level of back stroke in badminton.
2. The second experimental group (multimedia) achieved better performance on back stroke in badminton compared with the first group.

Recommendations:

- Multimedia technology should be used due to its positive effects on improving the performance of back stroke in badminton.
- Instruments used in this research can be used in case that data show is unavailable due to its positive effects on back stroke in badminton .
- Directing teachers towards the importance of manufacturing specific instruments for badminton according to type of skill.
- Performing similar studies on other skills like serve.
- Performing similar studies on female players.

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