The Effect of a Sport Education Curriculum Model on Handball Skill Performance of University Students

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Abstract

This study examined the effect of a sport education curriculum model on handball performance of university students. The participants were 30 university students enrolled in Handball Course. They were randomly assigned by section to one of two treatment groups: a control (n=15) and an experimental (n=15). The control group received a traditional teaching approach to sport-based activity while the experimental group received a sport education instruction model.

Pre- and post-test measures of the level of handball skills performances were obtained for both groups. Data obtained were analyzed using mean, standard deviation, T-test, and ANOVA. The study indicated the following findings:

- Significant differences were found between pre- and post-test measures of the experimental group in the level of handball skill performance. The differences were in favor of post-test measures.
- Significant differences were found between pre- and post-test measures of the control group in the level of handball skill performance. The differences were in favor of post-test measures.
- Significant differences were found between the post-test measures of the experimental and control groups in the level of handball skill performance. The differences were in favor the post-test of experimental group.
- The sport education curriculum model was significantly effective in acquisition of handball skills.

In the light of the results, it was concluded that sport education curriculum model should be used more often by instructors in teaching team sport. Additional research is needed in this area using other games and sports.

أثر استخدام نموذج المنهج الرياضي على أداء مهارات كرة اليد لدى طلبة الجامعة

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الملخص

هدفت هذه الدراسة إلى التعرف إلى أثر استخدام نموذج المنهج الرياضي على أداء مهارات كرة اليد لدى طلبة الجامعة. اشتملت عينة الدراسة على (٣٠) طالباً من طلبة قسم التربية الرياضية بجامعة البحرين المسجلين في مقرر أداء وتدريس كرة اليد، حيث تم تقسيمهم إلى مجموعتين متساويتين أحداهما تجريبية والأخرى ضابطة قوام كل منها (١٥) طالباً، وقد تم تدريس المجموعة التجريبية من خلال نموذج المنهج الرياضي، بينما تم تدريس المجموعة الضابطة من خلال نموذج المنهج التقليدي.

تم أجراء القياسات القبلية والبعدية لطلاب المجموعة التجريبية والمجموعة الضابطة في مستوى أداء مهارات كرة اليد، وقد استخدم المتوسط الحسابي والانحراف المعياري واختبار "ت" لتحليل النتائج. ومن ابرز النتائج التي توصلت إليها الدراسة ما يلي:

– وجود فروق ذات دلالة إحصائية بين متوسطي القياسيين القبلي والبعدي للمجموعة التجريبية في مستوى أداء مهارات كرة اليد لصالح القياس البعدي.

– وجود فروق ذات دلالة إحصائية بين متوسطي القياسيين القبلي والبعدي للمجموعة الضابطة في مستوى أداء مهارات كرة اليد لصالح القياس البعدي.

– وجود فروق ذات دلالة إحصائية بين متوسطي القياسيين البعديين للمجموعتين التجريبية والضابطة في مستوى أداء مهارات كرة اليد لصالح المجموعة التجريبية.

– أن نموذج المنهج الرياضي يسهم بشكل أفضل من نموذج المنهج التقليدي في تعلم واكتساب مهارات كرة اليد.

وفي ضوء نتائج هذه الدراسة أوصى الباحث بضرورة تشجيع المعلمين على استخدام نموذج المنهج الرياضي في تدريس الألعاب الجماعية، وإجراء دراسات مماثلة على ألعاب ورياضات أخرى.

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Introduction

Games and sports are a large part of all physical education programs. The development of competence and proficiency in a game/sport is recognized as a primary goal of physical education programs (Siedentop, Hastie, & van der Mars, 2004). A major assumption is that individuals who are more competent and proficient at games or sports are more likely to be active participants in that activity and lead a more active lifestyle. The challenge for physical education teachers has been to develop games competence through physical education classes, which usually contain students with a wide range of skill potential interest in becoming competent (Rink, French, & Tjeerdsma, 1996).

Teachers of physical education and sport have long been concerned with traditional approaches to teaching sport. They have done little beyond developing inert skill that have little reasonable chance of being used in a real setting (Barrett & Turner, 2000). The real and authentic setting for sport activities in this context is the game. The ultimate goal of sport instruction is for student to be able to play the game with enough skill to accrue the many and varied benefits of participation. Traditionally, physical educators have taken at face value the notion that before one can play the game, an individual must have at least some level of proficiency in the motor skills that are part of that game (Rink, 1996).

A second assumption has been that the best approach to skill learning is direct teaching (Rink, 2002). The use of direct instruction to teach game skills has been supported by research (e.g., French, Rink, Rikard, Lynn, & Werner, 1991), but the relationship between the approach used to teach motor skills and the ability of students to play the game itself has received little attention. Although many physical educators have called for modifications of the game and the inclusion of instruction in strategy at beginning stages of game play, most have acknowledged that at least some

level of implement strategies at any level of play (Rink, 2002).

In 1984 Daryl Siedentop developed and introduced sport education model as an alternative to traditional, technique-led approaches to games teaching and learning (Siedentop, 1994). The main purpose of sport education model is to educate students in various sports and to teach them to be players, in the fullest sense of that term. Students cannot learn to be good sportspersons unless they participate in sport. However, the traditional way in which physical education has been conceptualized bears very little resemblance to sport (Siedentop, et al., 2004).

The sport education is a curriculum and instruction model designed for delivery in physical education programs at the upper elementary, middle school, high school, and university levels. It is intended to provide children and youth with more authentic and enjoyable sport experiences than what we typically see in typical physical education classes. Students participate as members of teams in seasons that are longer than the usual physical education unit. They take an active role in their own sport experience by serving in varied and realistic roles that we see in authentic sport settings such as captains, coaches, trainers, statisticians, officials, publicists, and members of a sports council. Teams develop camaraderie through team uniforms, names, and cheers as they work together to learn and develop skill and tactical play (Siedentop, Mand, & Taggart, 1986).

Siedentop (1994) states that the sport education curriculum model was designed to provide positive motivational sport experiences for all students in physical education by simulating key contextual features of authentic sport. In addition to helping students improve their sport skills, sport education encourages them to fulfill other sport related roles such as referee, team coach, captain, and serving on a sports management board or as part of a duty team. Within the instructional structure of this curriculum the students gradually assume greater responsibility for learning while teachers relinquish traditional up-front direct teaching roles. The teacher, after moving off center stage, often acts as facilitator to student social knowledge and skill learning through a range of student-centered learning strategies.

Although not designed to be prescriptive in its implementation, the sport education model has key organizational structures that differentiate it from the traditional teacher-led physical education curricular model. Students work in the same small group throughout the extended length curriculum/season and are given responsibility for teaching each other

skills within a cooperative group structure. The teacher facilitates this process by helping students with their decision-making for choice of practices, which must be inclusive for all members in the small group structure (Siedentop, et al., 2004).

The sport education model grew out of a desire to give students a more generic appreciation for games (Siedentop, 1994). In recent years, the model has attracted widespread attention from teachers and coaches and, mort recently, from researchers for variety reasons, not the least of which is the more current emphasis in education on hand-on, authentic, meaningful learning that more fully involve the learner (Kirk, & MacPhail, 2001). In this respect the sport education model.

A number of studiers have been completed using the sport education curriculum model in the field of pedagogy. However, few examined the influence of a sport education curriculum model on skill performance of handball game. French, Werner, Rink, Taylor, and Hussey, (1996) examined the effects of a 3-week unit of sport education (tactical), skill, or combined sport (tactical) and skill instruction on badminton performance of ninth grade students. The three treatment groups exhibited better performance than a control group on cognitive components (decision making during games and serve decision during games) and skill components (percentage of forceful shots and contact with the shuttle) of game performance. No treatment differences were found for game performance measure. The companion group did score lower than the sport (tactical) on skill test for the drop and serve.

Recently, Harrison, Blakemore, Richards, Oliver, Wilkinson and Fellingham (2004) evaluated the effects of two instructional model skill teaching and sport education approaches on skill development, game play, knowledge, and self-efficacy for 169 high- and low-skilled players of 182 beginning university volleyball students. Three instructors each taught one sport education and one skill teaching classes two days a week for 16 weeks. The results revealed that low-skilled students improved more on the serve skills test, self-efficacy, and the percentage of legal sets and successful passes. High-skilled students improved more on the spike skills test and legal and successful spikes per serve. Neither model was superior.

Other studies in physical education have focused on the effect of sport education model on students' attitudes toward physical education. Studies of Alexander and Luckman (2001), Carlson and Hastie (1997) and Grant

(1992) have reported the positive effect that sport education has on student enthusiasm for physical education. Grant (1992) found that sport education promoted team affiliation, enhanced relationships among team members, and elevated enthusiasm among many students who previously seemed to dislike physical education and sport. Grant suggested that this student enthusiasm could be attributed to the fact that much of the decision-making and control of the experience was determined by the students themselves. Also, the students perceived the teacher to be less dominant than in traditional curricular approaches (Carlson & Hastie, 1997).

Alexander and Luckman (2001) conducted a survey study to examine (344) Australian teachers' perceptions of the Sport Education model, found that 83 % of teachers agreed that the model yields greater student interest in physical education than their previous approach to teaching sport in physical education. Much of this research on changes in student affective outcomes with the Sport Education model has been based on teachers' anecdotal accounts (e.g., Alexander & Luckman, 2001; Grant, 1992) reporting their impressions of student enthusiasm. Even when the effectiveness of the program was assessed in light of student perceptions, the designs did not incorporate appropriate comparison groups.

In a recent study, Wallhead and Ntoumanis (2004) examine the influence of a sport education model program on students' motivational responses in a high school physical education setting. Analyses revealed that increases in task-involving climate and perceived autonomy explained a significant amount of unique variance in the Sport Education students' post-intervention enjoyment, perceived effort, and perceived competence responses. The results suggest that the Sport Education curriculum may increase perceptions of a task-involving climate and perceived autonomy, and in so doing, enhance the motivation of high school students toward physical education.

The findings of these studies supported the nation of a correlation between the sport education instruction model and skill performance. Therefore, the aim of this study was to extend the findings of these studies and to investigate the influence of a sport education curriculum model on handball performance of university students taking into consideration the shortcomings of the reviewed studies.

Statement of Problem

Although previous studies have led some support to Siedentop call

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(1984) for a sport education curriculum model, most of them have been conducted on skill acquisition of sports other than handball (French, et al., 1996; Harrison, et al.., 2004). In addition, most of previous studies have been conducted with students of middle-school age (Wallhead & Ntoumanis, 2004). To date, the problem is that there has not been an attempt, as far the author knows, to look at skill acquisition of handball game through sport education model. Therefore, this study attempts to investigate the influence of sport education curriculum model on handball skill performance of university students.

Purpose of the Study

The main purpose of this study was to investigate the effects of a sport education curriculum model on handball skill performance of university students.

Hypotheses of the Study

To fulfill the purpose of this study the following null hypotheses were stated:

1-There will be no significant differences between pre- and post-test measures of the experimental group (sport education approach) in handball skill performance.

2-There will be no significant differences between pre- and post-test measures of the control group (traditional teaching approach) in handball skill performance.

3-There will be no significant differences between the post-test measures of the experimental and control groups in handball skill performance.

Significance of the Study

Through the investigation of the effects of a sport education curriculum model on handball skill performance of university students it is hoped that sport and game programs will be better taught to provide a meaningful experience to students in physical education classes. Furthermore, the result of the study may also shows where remedial development is necessary in order to improve the effectiveness of game performance of university students. Above all, this study hoped to provide more empirical evidence regarding the relationship between sport education curriculum model and skill performance.

Limitations of the Study

The study was limited by the following:

1- The study was limited to those university students who registered in the "Performance and Teaching Handball" course during summer term of the academic year 2004/ 2005 in University of Bahrain.

2- The study was limited to those tests which used to measure handball skill performance of university students.

Definition of Terms

For the purpose of this study the following terms will be used:

Sport Education Curriculum Model: Sport education model is a curriculum model in which the primary objective is to help students become skilled sports participants and good sportspersons (Siedentop, 1994).

Traditional curriculum model: This model is skill-oriented teaching approach relies on demonstrations, explanations, skill drills, lead-up games, game or team play, and competition (Rink, 2002).

Method and Procedures

Research Design:

This study was a quasi-experimental research design using one control group and one experimental group. Each group was randomly assigned to an experimental group or to control group. In the experimental group, students taught by sport education curriculum model. In the control group, students taught by traditional curriculum model. The independent variables were the two curriculum models while dependent variables were studentsí handball performance scores.

Participants:

Students: Participants in the study were 30 males' university students who registered in the "Performance and Teaching Handball" course during summer term of the academic year 2004/ 2005 in the University of Bahrain. The mean age of the students was 20.5 yrs (SD = 0.48). None of the students was taught handball in the current academic year, and none was experienced with a sport education curriculum. Signed informed consent for the study was obtained from the students.

The students were randomly divided into two groups. One of the two groups was randomly assigned as the control group (15 students) and the second group was assigned as the experimental group (15 students). Then

a pre-test was applied to examine the two groupsí equivalence in age, height, and handball skills before starting the study. The results are presented in table 1.

Table 1
Means, standard deviations and t-test of the experimental and control groups in the pre-test of equivalence

Variables	Items	Experimental G		Control G		T-value	P>/t/
		M	SD	M	SD		
Age	Year	20.7	1.12	20.3	1.19	1.45	NS
Height	CM	175.2	1.74	174.8	1.66	0.98	NS
Dribbling	Second	34	2.24	32	2.65	1.45	NS
Center Pass	No of Pass	31	2.22	30	2.16	1.52	NS
Snap Pass	No of Pass	28	1.45	29	1.23	1.23	NS
Center Shoot	No of Shoot	14	1.32	13	1.14	1.41	NS
Jump Shoot	No of Shoot	15	1.97	14	2.02	1.32	NS
Dive Shoot	No of Shoot	9	2.11	8	2.09	1.27	NS

The results of table 1 shows that the t-test result did not reveal any significant difference between the two groups before the study started which means that they were equal at the beginning of the study.

Teacher: The control and experimental groups were taught by the researcher who had 25 years of teaching experience in teaching handball as well as previous experience with the sport education curriculum model. Thus he was aware of the purpose of the study. A single instructor was utilized to help ensure consistency in the instruction and in the research protocol across the two groups.

Setting and Procedures:
The study took place at main gymnasium in the Isa Town campus of the University of Bahrain. The study was conducted over a period of seven weeks (the beginning of July 2005 to the third week of August 2005), six hours per-week, with group size and membership remaining constant. The two curricular programs were implemented in the games-based activity of handball.

In order to reduce investigator selection bias, prior to the start of the intervention the sport education curriculum model (n = 15 students) and a traditional approach model (n = 15 students) were randomly assigned by

an assistant to the two groups. One week prior to the course, all students were informed that they would be taking part in a study that "would look for new ways to teach handball," but they were not informed of the exact purposes of the study.

The pretest skill tests were conducted the first two days of the course, and posttest skill tests were conducted on four days prior the end of the course. Six experimenters were trained to administer the tests. At the beginning of class on each day of testing, students met initially in their respective group, and general instructions for the day were given by the teacher. Students were then individually called by an experimenter to the respective skill test station where they would begin testing. After completion of the first skill test, students rotated to the next skill test in a pre-arranged order. Experimenters at each station directed students to the next station in the rotation. Each experimenter read a short set of written instructions to the students for each skill test. The students then performed practice trials and the respective test.

Measurement Instrument:

The Handball Skill Test Battery (HSTB): Student handball skill performances were assessed using the "Handball Skill Test Battery (HSTB)" designed by Al-Kashif, Al-Mulla, Al-Marzooq, & Berham (1994). The HSTB consists of six handball performance tests (dribbling, center pass, snap pass, center shoot, jump shoot, dive shoot). Descriptions and procedures for the all six skill tests used in the study were exactly the same as those reported in Al-Kashif et al. (1994) .

Instrument Validity: After choosing the HSTB for testing handball performance, eight experts (four professors from the UOB, and four handball coaches in Bahrain) were asked for their comments regarding its suitability, appropriateness, and validity. The level of 87.5% inter-validity agreement was reached for the HSTB which indicated that the HSTB validity was adequate acceptable.

Instrument Reliability: Evidence for the reliability of the HSTB to test college students' handball performance has been established based on a sample of nearly 10 college students using repeated measure (test-retest) method over a period of one week. To determine the reliability of the six measures of the HSTB a Pearson's product moment r analysis was run for all six measures. The overall r value of the six measures of the HSTB was 0.83 which indicated that the HSTB reliability was adequately acceptable.

The alpha coefficients for all measures were deemed acceptable based on Thorndike (1997) cutoff criterion of .70 for the psychological and educational fields. The results of reliability coefficients are presented in table 2.

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Table 2
Coefficient Correlation (Pearson's r) Values for the HSTB

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Measure	r
Dribbling	0.83
Center Pass	0.86
Snap Pass	0.80
Center Shoot	0.86
Jump Shoot	0.82
Dive Shoot	0.83
Total	0.83

Curriculum Models
Sport Education Curriculum Model:

In the experimental setting the teacher implemented the sport education model which was developed by Siedentop (Siedentop, 1994). The curriculum model followed a three-phase format: a teacher-directed skill development phase, a preseason scrimmage phase, and finally a formal competition phase. The teacher-directed skill development phase involved 5 lessons, during which students led warm-ups but were given teacher instructions on the generic skills of scoring, passing, and dribbling. The preseason phase also involved 5 lessons and was designed primarily for students to work in their teams with practices led by the student-coach and facilitated by the teacher. In this phase the students took responsibility for refereeing and the choice of tactics and team strategies. During this phase no formal records were kept of scrimmage results. The formal competition phase involved 10 lessons and consisted of teams practicing for a 40-min period and then participating in two competitive games per lesson. Although during this phase the students had the choice of warm-up and skill session and were responsible for refereeing and scoring, the introduction of formal competition could have fostered some elements of an ego-involving climate (e.g., public and normative evalua-

tions of success).

During each phase of the sport education program, the specific respon-sibilities associated with the roles of coach, referee, captain, and scorer were explicitly stated to the students. Students on each team were respon-sible for selecting individuals to fulfill each role. In order to create an accountability system for the student-led selection process, the students signed contracts of role responsibility designed by the teacher and then returned the contracts to the teacher.

Traditional Curriculum Model:

Lesson plans for the group taught with a traditional model of teaching were taken from "Teaching Physical Education for Learning" by Rink (Rink, 2002). The format of every lesson was similar. Since each lesson run for 1 hour and 45 min, each lesson consisted of a 15-min warm-up fol-lowed by a 60-min skill related practice and ending with a 30-min round-robin 6-v-6 tournament. The handball drills and warm-up practices used in this approach were at the same level of skill development as in the sport education curriculum model. For the 7 weekly lessons using the tradition-al style of teaching, most of the decisions on choice of tasks, team struc-ture, and rate of progression were dictated by the teacher. Instruction was issued to the whole class rather than to small group settings, and students were not responsible for refereeing, coaching, or scoring in any direct or public way.

The traditional curriculum model that evolved in the study (Rink, 2002), stresses successful performance of psychomotor skills first in game-like drills, next in modified games, and finally in game play. The model incorporates aspects of Mosston and Ashworth's (2002) inclusion style.

Data Analyse:

The Statistical Package for Social Sciences (SPSS) computer program was used for statistical treatment of the data. The study used an inferen-tial statistic using independent t-test measures to show the pretest to posttest improvement for each group for each skill. Independent t-test measures were also used to examine the effects of the two curriculum models (sport education curriculum model versus traditional curriculum model) on handball skill performance. The .05 level of significance was used to determine whether to accept or reject the study null hypotheses.

Results:

The results will be presented separately as related to the three null hypotheses of the study.

1- The results of the first null hypothesis: There will be no significant differences between pre- and post-test measures of the experimental group (sport education approach) in handball skill performance.

In order to test for differential across the pre- and post-test measures of the experimental group, we computed independent t-test tests on the means' score of each skill test of the HSTB. The means, standard deviations, t-test values, and p values for each test are presented in table 3.

Table 3
Mean, Standard Deviation, and t-test value for pre- and post-test of the experimental group across the six measures

Skill Test	Pre-test		Post-test		t-value	p
	M	SD	M	SD		
Dribbling	36	1.95	31	2.10	2.02	<.05
Center Pass	29	2.12	38	2.11	3.84	<.05
Snap Pass	29	2.32	36	2.05	3.12	<.05
Center Shoot	13	1.93	16	1.85	3.02	<.05
Jump Shoot	14	1.89	17	1.98	3.42	<.05
Dive Shoot	8	1.90	14	2.12	3.10	<.05

* t value at $p < 0.5 = 1.98$

As shown in table 3, a t-test analysis revealed that there were significant differences between curricular lessons in all skill tests. Statistically significant differences were found in dribbling test ($t = 2.02$, $p = <.05$), center pass test ($t = 3.84$, $p = <.05$), snap pass test ($t = 3.12$, $p = <.05$), center shoot test ($t = 3.02$, $p = <.05$), jump shoot test ($t = 3.42$, $p = <.05$), and dive shoot test ($t = 3.10$, $p = <.05$). This data analysis revealed that college students significantly improved from pretest to posttest for all skills.

2- The results of the second null hypothesis: There will be no significant differences between pre- and post-test measures of the control group (traditional teaching approach) in handball skill performance.

Independent t-test measures were used to examine the differences between the pretest and posttest of the control group which was taught by

traditional model in each skill. The pretest and posttest means, standard deviations, t-test values, and p values for each skill test are presented in table 4.

Table 4

Mean, Standard Deviation, and t-test value for pre- and post-test of the control group across the six measures

Skill Test	Pre-test		Post-test		t-value	p
	M	SD	M	SD		
Dribbling	38	2.11	35	2.38	1.86	>.05
Center Pass	27	2.46	30	2.56	2.08	<.05
Snap Pass	27	2.31	31	2.29	2.25	<.05
Center Shoot	10	1.98	12	2.01	2.22	<.05
Jump Shoot	11	1.97	13	1.89	2.43	<.05
Dive Shoot	7	2.30	10	2.43	2.09	<.05

* t value at p < 0.5 = 1.98

As presented in table 4, t-test analyses revealed that there were significant differences between pre- and posttest of the control group for five skill measures. Statistically significant differences were found in center pass measure (t = 2.08, p = <.05), snap pass measure (t = 2.25, p = <.05), center shoot measure (t = 2.22, p = <.05), jump shoot measure (t = 2.43, p = <.05), and dive shoot measure (t = 2.09, p = <.05). No statistically significant difference was found in dibbling test mean scores between pre- and post-test of the control group (t = 1.86, p = >.05). The data analysis suggested that students of the control group significantly improved from pretest to posttest for most skills.

3- The results of the third null hypothesis: There will be no significant differences between the post-test measures of the experimental and control groups in handball skill performance.

Independent t-test measures were used to examine the effects of the two curriculum models (sport education curriculum model versus traditional curriculum model) on handball skill competence. In order to test for differential across the post-test measures of the experimental and control group, we computed independent t-tests on the means' score of each skill test. The means, standard deviations, t-test values, and p values for each test are presented in table 5.

Table 5
Mean, Standard Deviation, and t-test value for post-test measures of the experimental and control groups across the six skill tests

Skill Test	Experimental		Control		t-value	p
	M	SD	M	SD		
Dribbling	31	2.10	35	2.38	3.09	<.05
Center Pass	38	2.11	30	2.56	3.21	<.05
Snap Pass	36	2.05	31	2.29	3.25	<.05
Center Shoot	16	1.85	12	2.01	3.29	<.05
Jump Shoot	17	1.98	13	1.89	3.39	<.05
Dive Shoot	14	2.12	10	2.43	3.41	<.05

*t value at p < 0.5 = 2.09

As illustrated in table 5, a t-test analysis on skill test scores revealed that students in experimental group scored significantly higher ($p < .05$) on their posttest for all skills tests than did those in the control group. The significant differences were discovered for the dribbling measure ($t = 3.09$, $p = <.05$), center pass measure ($t = 3.21$, $p = <.05$), snap pass measure ($t = 3.25$, $p = <.05$), center shoot measure ($t = 3.29$, $p = <.05$), jump shoot measure ($t = 3.39$, $p = <.05$), and dive shoot measure ($t = 3.41$, $p = <.05$).

Discussion:

The purpose of the present study was to assess the effectiveness of a Sport Education intervention in enhancing effects of university students' handball performance. The discussion is organized into three sections based on the research hypotheses.

Discussion of the first hypothesis findings: The first question examined in this study was the differences between pre- and post-test measures of the experimental group for all six skills. The data analysis on test scores revealed that experimental group students significantly improved from pretest and posttest for all skills tests. These indicated that students in the sport education group reported significant pre- to post-intervention increases in skill acquisition, enjoyment and perceived competence. The Sport Education curriculum model effectively brought about positive changes in students' performance and enjoyment of a sport-based physical education program. The increases in several skills' performances

indices are consistent with the findings of Alexander and Luckman (2001) and Wallhead and Ntoumanis (2004) who reported increases in skill acquisition and enjoyment among boys in a sport education class. According to Siedentop, et al. (2004)) sport education model intended to provide children and youth with more authentic and enjoyable sport experiences than what we typically see in typical physical education classes. Findings also indicated students in sport education model improved significantly in their ability to dribble, pass, and shoot the handball with consistency and efficiency in simple gamelike play as evidenced by their skills test scores. Regular game play proficiency also improved.

Discussion of the second hypothesis findings: The second question addressed here was the differences between pre- and post-test measures of the control group for all six skills. The findings of the control group are also interesting. Although the results of this study indicated that the traditionally taught curriculum group reported significant changes in five handball skills of the six which tested in the study from pre- to post-intervention, the performance of the traditional group indicated very slightly development in center pass, snap pass, center shoot, jump shoot, and dive shoot. For the dribbling skill there was no significant increase in the mean scores from pre- to post-intervention. This finding is consistent with Metzler (2000) who claims "there can be 'no one best way' to teach sport and game" (p. 14) and Harrison et al. (1999). Since the results indicated no significant changes in some skills, these data revealed traditional curriculum model was not always effective in providing student with opportunities to enhance skill competence. Overall, traditional curriculum model was not appropriate, and did not appear to contribute to all skills acquisitions.

Discussion of the third hypothesis findings: The third question addressed here was the differences between pre- and post-test measures of the experimental and control groups for all six skills. The results showed that students in the sport education curriculum group reported significantly higher post intervention skill competence and perceived effort than those taught with the traditional curriculum model, i.e., the control group. These findings provided support to previous research on teacher anecdotal perceptions of the positive effect of sport education on student skill performance and motivation in physical education (Alexander & Luckman, 2001; Grant, 1992). Furthermore, Alexander, Taggart, and Thorpe (1996) analyzed student perceptions of the sport

education model and concluded that the students prefer the model because they learn more and are more involved in the lessons compared to traditional physical education curricula.

In a more recent study, which investigated the effects of a sport education intervention on students' motivational responses and skill acquisition in physical education, Wallhead and Ntoumanis (2004) suggested that students enjoy the model because the emphasis is not only on learning sport skills but also on learning personal and social skills. Previous research has shown that a shift in emphasis from just learning sport skills to working in cooperative groups is conducive to fostering student enjoyment (Alexander & Luckman ,2001).

Alexander and Luckman (2001) claimed that the pedagogy of a model which offers an extended season, persisting groups, less direct teaching, and more responsibility for students can create skill competence and enjoyment for students in physical education. Hastie (1998) has suggested that the extended season and persisting grouping of the sport education curriculum can increase student skill and tactical development. However, this finding differed from the findings of the Harrison et al. (2004) study in which they reported students in both approaches improved significantly in their ability to perform handball as evidenced by their skills test scores.

The finding was noteworthy because it suggested that physical education teachers should attempt different curriculum model to enhance students interest towards sports and games. If sport continues to be the driving force of physical education to remain in our schools, as Siedentop (1994) stated, changes should be made so that sport objectives are not just lip-service. Research by Wallhead and Ntoumanis (2004) has proposed that many teachers who utilize the Sport Education model do so primarily as a vehicle to promote student skill competence, enjoyment, values, and attitudes.

Although a primary goal of Sport Education is to develop "competent performers" (Siedentop, 1994, p. 4), a teacher's implementation of the model which overemphasizes student affective outcomes, and the accountability systems that accompany these goals, may indirectly affect the model's potential for developing student skill and tactical performance. Further research is required to examine the potential effect- not only of the duration of the season but also the implementing teacher's curricular goals- on student skill development and perceptions of competence in

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the sport education unit.

The findings provided important evidence to physical educators who wish to design more effective experiences in teaching sport and game activities. Sport based traditional approach of the past had not been successful in developing skills competencies and attracting and maintaining interest of students, mainly because they focused on the skill in unrealistic game setting. Wallhead and Ntoumanis (2004) found that sport education model was one of the most influential learning factors to promote student skill competence, enjoyment, and attitudes.

The results of this study indicated that the structural characteristics of the sport education curriculum, such as team continuity and peer coaching, could facilitate a task-involving climate, and appear to develop sport skill competence. Despite this, the inherent nature of formal competition in the final phase of the curriculum may have attenuated, for some students, the positive experiences from sport education. The phase of formal competition in the model brings with it the potential for students to judge success based on norm-referenced criteria. This type of evaluation can create an ego-involving climate, and many lower skilled students may perceive this competitive environment more as a threat and less intrinsically motivating (Mitchell, 1996). Although the use of formal competition is a basic tenet of the sport education curriculum model, a teacher's overemphasis on game results in determining season champions could create an environment that forces student to overtly evaluate themselves in relation to others. Implementing multiple strategies such as fair play evaluations, performance of duty roles, and other season related tasks may help prevent excessive emphasis on normative ability comparisons and the negative motivational outcomes associated with an ego-involving climate.

Conclusions and Recommendations:

The results of this study suggest that the structural characteristics of the sport education curriculum delivered in this study, such as team continuity and peer coaching, facilitated perceptions of a task-involving climate, which in turn fostered skill acquisition of handball game. This finding supports the notion that sport education model can have a positive effect on student handball performance. In practical terms this means that when students engage in the sport education curriculum, they do so because they personally grasp its value for game play and team building,

and so are more likely to feel competent in the various sport activities.

Although this study has contributed to the literature on how a sport education curriculum approach can optimize learning environments in sport-based physical education, there are limitations that must be considered. One was the size and composition of the study sample. With only two groups of boys in its design, this study cannot be readily generalized to girls taking part in the sport education curriculum. There is also the possibility of bias in that the researcher acted as the instructor and was aware of the study objectives. Therefore, the use of several instructors delivering the sport education curriculum to a larger number of coeducational classes might alleviate this potential sampling and instructor bias.

Despite its limitations, however, the results of this study showed that the sport education curriculum model has many structural features which, when utilized effectively by teachers, had the potential to foster more effective skill performance. Although the majority of sport education research was focused on variables of skill development and performance, further research should be directed to other variables such as student enjoyment, knowledge, self-efficacy, and attitudes. Additional research also is needed in this area using other games and sports.

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