PHYSICAL ACTIVITY LEVELS IN COED AND SAME-SEX PHYSICAL EDUCATION USING THE TACTICAL GAMES MODEL

by

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ABSTRACT

It is recommended that physical education (PE) students spend 50% of class time in physical activity (PA). Instructional setting and instructional models are a few factors that can affect student PA levels. The purpose of this study was to compare PA levels of junior high school PE students participating in coed and same-sex PE classes that followed the tactical games instructional model during four sport units.

Participants were 446 PE students enrolled in the seventh, eight, and ninth grade. Two experienced PE teachers, one female and one male, conducted all classes. Participants completed eight lesson units in basketball, volleyball, flag football, and soccer. Classes were randomly assigned as coed or same-sex. ActiGraph GT1M accelerometers were worn by all students to monitor PA levels and cut-points were used to characterize PA as light or moderate-to-vigorous (MV).

A three-way between-subjects analysis of variance was conducted to evaluate the effect of gender, class setting, and grade level on PE students’ PA levels for each activity unit. Males were more active than females in every activity. For the most part there was no difference in PA for males between the same-sex and coed setting for all units. Females spent a higher percentage of time in MVPA in the same-sex setting for most activities. There were small grade effects but in general the percent of time being active decreased with increasing grade levels. Each sport activity showed a unique effect on PA levels due to gender, setting, and grade level when using the tactical games approach.
The flag football unit revealed a statistically significant three-way interaction between gender, setting, and grade whereas volleyball and soccer both had statistical significant two-way interactions between setting and grade. Basketball and volleyball had statistically significant two-way interaction between gender and setting.

It was concluded that setting does affect PA levels of males and females depending upon the sport unit. Males were more active than females in all activities. Also student activity levels were affected by setting and grade depending on sport unit. The tactical games approach showed promise as most sport activities showed the total physical activity levels (light and MV) near or above 50% of the total class time. It is recommended that further research examine several instructional models in a coed and same-sex setting and compare student PA levels.
This dissertation is dedicated to my family. Without their inspiration and support none of this would have been possible.
# TABLE OF CONTENTS

ABSTRACT .................................................................................................................... iii

LIST OF TABLES .............................................................................................................. viii

LIST OF FIGURES .......................................................................................................... ix

ACKNOWLEDGEMENTS .................................................................................................. x

Chapters

1 INTRODUCTION ........................................................................................................... 1

   Statement of the Problem ......................................................................................... 1
   Purpose of the Study ............................................................................................... 6
   Significance of the Study ........................................................................................ 6
   Limitations .............................................................................................................. 7
   Delimitations ......................................................................................................... 8
   Assumptions ......................................................................................................... 8
   Aims and Research Hypothesis ............................................................................. 9
   Definition of Terms ............................................................................................. 10

2 REVIEW OF RELATED LITERATURE ....................................................................... 12

   Adolescent Physical Activity in Physical Education ............................................. 12
   Tactical Games Model .......................................................................................... 16
   Physical Activity Measurement in Physical Education ...................................... 22
   Coeducational and Same-Sex Settings in Physical Education .......................... 26
   Conclusions ......................................................................................................... 31

3 METHODS .................................................................................................................. 33

   Participants and Setting ....................................................................................... 33
   Instrumentation .................................................................................................... 36
   Research Design .................................................................................................. 42
   Data Collection Procedures ............................................................................... 42
   Data Reduction and Statistical Analysis ............................................................ 44

4 RESULTS AND DISCUSSION .................................................................................. 46
Results.................................................................................................................46
Primary Analysis............................................................................................48
Summary of Results for Research Hypotheses .............................................64
Discussion........................................................................................................67
Limitations of the Study.................................................................................81
Strengths of the Study...................................................................................82

5 SUMMARY, FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS ....83

Summary..........................................................................................................83
Findings.........................................................................................................85
Conclusions....................................................................................................87
Recommendations.........................................................................................89

Appendices

APPROVAL LETTER.........................................................................................91
INFORMED CONSENT ....................................................................................93
DEMOGRAPHIC SURVEYS..............................................................................96
TACTICAL GAMES LESSON PLANS..............................................................99
REFERENCES ................................................................................................153
LIST OF TABLES

3.1 Students Age, Grade and Sport Participation by Gender and Race ..................34
3.2 Sample Size for each Sport Unit with Both Settings Combined ..................35
3.3 Sample Size for each Sport Unit by Grade and Gender in Separate Settings ........37
3.4 Average Lesson Time for each Sport by Class Period ............................38
4.1 Alpha Coefficients for each Activity ..................................................47
4.2 Alpha Coefficients for All Thirty-Two Lessons ...................................48
4.3 Percentage of Class Time Spent in each of the Two Intensity Levels During the
Basketball Unit: By Grade and Gender for each Setting ...............................51
4.4 Percentage of Class Time Spent in each of the Two Intensity Levels During the
Basketball Unit: By Grade and Gender with Both Settings Combined ..............52
4.5 Percentage of Class Time Spent in each of the Two Intensity Levels During the
Volleyball Unit: By Grade and Gender for each Setting ...............................55
4.6 Percentage of Class Time Spent in each of the Two Intensity Levels During the
Volleyball Unit: By Grade and Gender with Both Settings Combined ................56
4.7 Percentage of Class Time Spent in each of the Two Intensity Levels During the
Football Unit: By Grade and Gender for each Setting ..................................60
4.8 Percentage of Class Time Spent in each of the Two Intensity Levels During the
Football Unit: By Grade and Gender with Both Settings Combined ................61
4.9 Percentage of Class Time Spent in each of the Two Intensity Levels During the
Soccer Unit: By Grade and Gender for each Setting .................................65
4.10 Percentage of Class Time Spent in each of the Two Intensity Levels During the
Soccer Unit: By Grade and Gender with Both Settings Combined ..................66
LIST OF FIGURES

2.1 The Teaching Games for Understanding Model.......................................................19
2.2 The Tactical Games Model......................................................................................19

4.1 Percentage of Time Spent in Light Activity in the Basketball Unit by Setting and Gender..........................................................................................................................50
4.2 Percentage of Time Spent in MVPA in the Basketball Unit by Setting and Gender...50
4.3 Percentage of Time Spent in Light Activity in the Volleyball Unit by Setting and Gender..........................................................................................................................53
4.4 Percentage of Time Spent in Light Activity in the Volleyball Unit by Setting and Grade..........................................................................................................................54
4.5 Percentage of Time Spent in MVPA in the Volleyball Unit by Setting and Grade....54
4.6 Percentage of Time Spent in Light Activity in the Football Unit for the Seventh Grade by Setting and Gender...............................................................................................58
4.7 Percentage of Time Spent in Light Activity in the Football Unit for the Eighth Grade by Setting and Gender...............................................................................................58
4.8 Percentage of Time Spent in Light Activity in the Football Unit for the Ninth Grade by Setting and Gender...............................................................................................59
4.9 Percentage of Time Spent in Light Activity in the Soccer Unit by Setting and Grade..............................................................................................................................63
4.10 Percentage of Time Spent in MVPA Activity in the Soccer Unit by Setting and Grade..............................................................................................................................63
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CHAPTER 1

INTRODUCTION

Statement of the Problem

The benefits of participating in physical activity (PA) are numerous. The physiological benefits include but are not limited to a reduced risk of heart disease and strokes, lowering of cholesterol and blood pressure, reducing the risks of certain cancers, and helping to maintain appropriate body weight (USDHHS, 2008a; 2008b; 2010). The psychological benefits include a reduction in feelings of depression, anxiety, and stress (USDHHS, 2008a; 2008b; 2010). Among adolescents, PA also helps build and maintain healthy bones, muscles, and joints (USDHHS, 2005; 2008a; 2008b; 2010). Despite the known benefits of PA, adolescents have become increasingly sedentary (Sallis, Prochaska, & Taylor, 2000). The U.S. Department of Health and Human Services (2008b; 2010) has recommended that children and adolescents between the ages 6-19 participate in 1 hour of moderate-to-vigorous physical activity (MVPA) on most days of the week, preferably daily. It was reported in 2005 that only 36% of high school students participated in an hour or more of PA on 5 or more days of the week (CDC, 2005). Also, adolescent PA participation declines with age with the greatest decrease occurring among females (CDC, 2005).

An opportunity to influence PA among adolescents is during physical education (PE) classes (National Association for Sport and Physical Education, 2009). The National
Association for Sport and Physical Education (NASPE) recommends that all middle/junior high school students receive 60 minutes of daily PE (NASPE, 2009). The Healthy People 2020 goals recommend that adolescents should be active 50% of their allotted PE class time (objective PAF HP2020-4; U.S. Department of Health and Human Service, 2009). There is no recommendation whether this 50% of class time should be specifically spent in MVPA. This recommendation could be a combination of light and MVPA. Research conducted among adolescents has shown that students on average engage in MVPA for about 27% of the PE class time (Fairclough & Stratton, 2005b). Physical activity is not the only goal of physical educators. Physical education teachers develop goals for their students in the cognitive, affective, and psychomotor domains. By focusing on all three domains physical education teachers can influence students by providing the students with some PA during class, the knowledge and competence to perform many activities, and the value and enjoyment in participating in PA.

There are many factors that contribute to the PA levels, knowledge, and enjoyment that students gain in PE. These include both environmental and psychological factors. Environmental factors include the teacher, peers, parents (social influence), setting (gym or outdoors), same-sex or coeducational (coed) classes, and teacher instructional choice and model (Hannon & Ratliffe, 2005; McKenzie, Prochaska, Sallis, & LaMaster, 2004; Schmitt, 2002; Whitehead & Biddle, 2008). Psychological factors include the students’ motivation (intrinsic and extrinsic), perceptions of activities, perceptions of class setting (i.e., same-sex or coed), perceptions of peers and teachers, and social aspects of PE (Hassandra, Goudas, & Chroni, 2003; Koka & Hein, 2003).
PE instructional models provide a framework as to what students are going to learn, how students are going to acquire that learning, and how they will be assessed. Within the various instructional models used in PE such as sport education, cooperative learning, direct instruction, peer teaching, inquiry teaching, and tactical games very little research has been conducted measuring PA levels of students (Metzler, 2005). Specifically, the tactical games model has received little attention relative to PA. The tactical games model is based on a sequence of developmentally appropriate games. These games are called game forms. Game forms are not the full version of a game but a modified version, meaning smaller team sizes and rule changes. Students participate in a game form that focuses on a tactical problem. Typically these games are usually three versus three or four versus four. Students solve the tactical problem through playing the game form and using the appropriate skill that corresponds with the tactical problem. Students participate in the game form at the beginning of class. Once the students have solved the tactical problem there is a designated time in the lesson to develop the appropriate skills necessary to continue to play in the game. After the designated time for skill development students return to the same game form or a slightly different game. Past research on the tactical games model has focused primarily on the improvement of student knowledge, decision making in game situations, and overall game performance. Research has shown that the tactical games model has shown significant improvement in student knowledge and decision making during game play (Turner & Martinek, 1992, 1999; Turner, 1996). However, little to no research has been conducted on student PA levels during instruction using the tactical games model. Since the teams are smaller, the students should have more opportunities to respond during game play. For example in a
five versus five basketball game not every student will have the opportunity to dribble or to shoot a basketball. However, if the teacher makes the teams smaller in size this will in all likelihood provide the student with more opportunities to respond. This should lead to students being more active within the game setting. A rationale for using the tactical games model is that it provides interest and excitement to the student because the students are involved in game play more often and sooner in the lesson than other instructional models. Students find playing games more interesting, motivating, and authentic than typical skill development drills. In a typical skill based model students spend the majority of class time working on skill development, which would entail less movement than what would occur during game play. If students are involved in more small-sided game play opportunities and students are interested and motivated in playing games one may assume that the students would have a higher amount of PA. Thus future research is needed to assess PA of students during tactical games lessons.

Another environmental factor that has been shown to influence student participation, activity levels and motivation is whether classes are taught in a coed or same-sex setting. The majority of past research in coed and same-sex PE has focused on student perception which is a psychological factor. Survey research has indicated that high school students’ support or like coed PE classes more than same-sex classes (Hannon & Ratliffe, 2005; Lirgg, 1993; Rice, 1988; Tannehill, Romar, O’Sullivan, England, & Rosenberg, 1994). However, this contradicts the results of Cockburn’s (2001) survey of ninth-grade girls who indicated they were discouraged being in classes with boys and would feel more encouraged in an all girls class. Lirgg (1993) surveyed male and female middle school PE students and his results indicated both males and females preferred same-sex PE.
Several interview studies conducted among middle and high school PE students indicated that students preferred same-sex PE classes (Olafson, 2002; Osborne, Bauer, & Sutliff, 2002; Taylor et al., 1999). Several reasons were offered for the same-sex preference. Boys indicated that girls did not put forth a high enough effort. Girls indicated that they felt coed classes were inequitable, unpleasant, and boys were not cooperative. Girls stated that they would be more interested in gym, and attendance would increase in a same-sex class.

Limited research is available on PA levels of male and female PE students in coed and same-sex settings. McKenzie et al. (2004) examined the PA levels of middle school boys and girls in coed and same-sex PE settings using the System for Observing Fitness Instruction Time (SOFIT). Results indicated that the boys had similar amounts of MVPA in both settings whereas girls accumulated more MVPA in a coed setting than a girls only setting. Hannon and Ratliffe (2005) examined PA levels of male and female high school PE students in soccer, flag football, and ultimate Frisbee game play through the use of pedometers. Results indicated that males and females accumulated the same or higher steps per minute in the coed setting than the same-sex setting. These studies suggest that coed classes are appropriate in providing higher levels of MVPA than same-sex settings, which is in accordance with the Title IX philosophy. However, there are only a few studies that have examined PA in coed and same-sex settings. To conclude that coed classes are appropriate in providing higher levels of MVPA in a coed setting more studies are needed that are conducted with multiple grade levels with multiple individual and team sport activities before definitive conclusions can be made.
Research thus far on coed and same-sex classes is somewhat limited and conflicting. Further research is needed in examining coed and same-sex settings in regard to students’ PA levels. Hannon and Williams (2008) suggested that additional studies need to be conducted on student PA levels in coed and same-sex settings using various types of instructional models.

**Purpose of the Study**

The purpose of this study was to compare PA levels of junior high school PE students participating in coed and same-sex PE classes that follow the tactical games model over basketball, soccer, flag football, and volleyball units.

**Significance of the Study**

PE class is a time when students have the opportunity to engage in PA, learn motor skills, and develop a positive attitude for being active for a lifetime. However, in the past decade adolescents have become less active once school is dismissed, thus contributing to high rates of obesity among the adolescent population. In addition, research suggests that when students are engaged in a PE class that PE does not provide students with enough MVPA time.

Few studies have measured student PA levels during a tactical games lesson, unit, or semester course. Furthermore, no studies have examined and compared student PA levels during a tactical games unit taught in coed and same-sex PE classes. Also, few studies have examined students’ PA levels in coed and same-sex class settings (Hannon & Williams, 2008). Therefore, a study that examines student PA levels in a coed and
same-sex setting utilizing a tactical games approach would be significant in that it would add to the limited research data.

This study is significant in that it may provide evidence of a specific approach (tactical games) teachers’ could use to enhance PA levels of males and females in either coed or same-sex class settings. This study may also provide reasoning for the use of coed or same-sex classes in PE today. This research could provide further information for policy makers and legislators in making appropriate decisions regarding coed or same-sex class settings.

This study also has implications in teacher training in undergraduate and graduate teacher preparation programs and school district workshops. If teachers and future teachers understand that the tactical games approach is an effective instructional model in providing students with higher levels of PA in either coed or same-sex classes and implement this approach, educators will influence and contribute to the amount of MVPA students should receive each day. The tactical games model has shown to be effective in improving student tactical decision making during game play and knowledge (Turner & Martinek, 1992, 1999; Turner, 1996). If the tactical games model also can contribute to increased levels of PA this model would be widely accepted because it meets multiple goals (increasing student knowledge and activity levels) within a PE setting.

Limitations

The following limitations were recognized for this study:

1. Participants were junior high school PE students located in the Southwestern region of the United States and may not reflect the total population of junior high school PE students.
2. Participants were selected through convenience. Participants included any consenting student from North Layton Junior High School who enrolled in the team sports/life time activities courses in the fall semester of 2008.

3. The teachers had little experience teaching with the tactical games model. Teachers were required to participate in a seminar focusing on the tactical games model and practiced using this model in one unit prior to the beginning of this study.

**Delimitations**

This study was delimited to:

1. One geographic region, thus limiting the generalizability among junior high school PE students in the United States.

2. The tactical games model and coed or same-sex class settings.

3. Strictly examining junior high school students between the ages of 11-16 years old.

4. The following team sports units: basketball, volleyball, flag football, and soccer.

5. Accelerometers as the only measurement of PE students’ PA activity levels.

**Assumptions**

The study was conducted under the following assumptions:

1. That the participants represented a normal population of junior high school male and female PE students.
2. That the participants were enrolled in the PE class for class credit or for the enjoyment of PA.
3. That the PE teachers followed the tactical games model in its entirety for each lesson and unit during the study.
4. That the PE students followed the teacher’s directions and activities that were based on the tactical games model.
5. That the PE students wore the accelerometers appropriately as instructed by the primary researcher for each lesson.

Aims and Research Hypothesis

The following aims and hypotheses were addressed by this study:

Primary Aim and Hypothesis

The aim of this study is to compare the light and MVPA levels, as measured by accelerometers, of junior high school male and female students participating in coed or same-sex PE class settings during soccer, flag football, basketball, and volleyball units using the Tactical Games model. It was hypothesized that male junior high school students would spend a similar percentage of time in light and MVPA, as measured by accelerometers, in coed or same-sex PE settings regardless of activity. It was hypothesized that female junior high school students would spend a similar percentage of time in light and MVPA in coed versus same-sex PE regardless of activity. It was hypothesized that male junior high school students would spend a higher percentage of time in light and MVPA compared to female junior high school students in both coed and same-sex PE settings regardless of activity.
Secondary Hypothesis

The second aim of this study is to compare light and MVPA levels, as measured by accelerometers, of seventh, eighth, and ninth grade junior high school students participating in during soccer, flag football, basketball, and volleyball units, using the Tactical Games model. *It was hypothesized that seventh grade students would spend a higher percentage of time in light and MVPA than the eighth, and ninth grade students and the eighth grade students would spend a higher percentage of time in light and MVPA than the ninth grade students regardless of activity or setting.*

Definition of Terms

**Accelerometer:** A small noninvasive device that measures change in velocity over time (Welk, 2002).

**Coeducational Physical Education:** Coeducational PE class consists of male and female students.

**Gender Equity:** Is the belief in the equality of people of every sexual orientation (Davis, 2003).

**Inactivity:** Persons not engaging in any regular pattern of PA beyond daily functioning (Welk, 2002).

**Instructional Model:** A comprehensive and coherent plan for teaching that includes a theoretical foundation, statements of intended learning outcomes, teacher’s content knowledge expertise, developmentally appropriate and sequenced learning activities, expectations for teacher and student behaviors, unique task structures, measures of learning outcomes, and mechanisms for assessing the faithful implementation of the model itself (Metzler, 2005).
Moderate-to-Vigorous Physical Activity (MVPA): MVPA refers to a level of effort in which a person should experience an increase in heart rate or breathing.

Motivation: Stimulation of the interest of a person in an activity.

Physical Activity: Any bodily movement produced by skeletal muscles that result in an expenditure of energy (Welk, 2002).

Regular Physical Activity: A pattern of physical activities that are performed most days of the week.

Same-sex Physical Education: Same-sex PE class consists of all male or all female students.

Tactical Games Model: The tactical games model is based on a sequence of developmentally appropriate game-like learning activities that focus on students solving tactical problems (Mitchell, Griffin, & Oslin, 2006).
CHAPTER 2

REVIEW OF RELATED LITERATURE

The purpose of this study was to compare PA levels of junior high school PE students participating in coed or same-sex PE classes that followed the tactical games model over basketball, soccer, flag football, and volleyball units. This review of literature was organized into four sections: (a) adolescent PA in PE, (b) the tactical games model, (c) coed and same-sex settings in PE, and (d) measurement of PA in PE. At the conclusion of each section, the relevance of the literature to the current research was discussed. Special consideration was given to the lack of research on PA levels of junior high school students in PE class in regard to the tactical games model and coed and same-sex settings.

Adolescent Physical Activity in Physical Education

Regular participation in PA can provide adolescents immediate physical and psychological health benefits. Regular PA participation reduces the risk of heart disease and strokes, lowers cholesterol and blood pressure, reduces the risks of certain cancers, helps maintain appropriate body weight, and reduces feelings of depression, anxiety, and stress (USDHHS, 2008a & b). Despite this knowledge adolescents are becoming increasingly sedentary (Sallis et al., 2000). Approximately half of American youths between the ages of 12 and 21 lack regular PA (Frenn et al., 2003). As a result the prevalence of adolescent obesity is increasing in the U.S. According to the 2007-2008
National Health and Nutrition Examination Survey (NHANES) 17% of children and adolescents in the U.S. between the ages of 2 and 19 years old are obese (CDC, 2010).

The National Association for Sport and Physical Education (NASPE) recommends that all middle/junior high school students receive 60 minutes of daily PE (NASPE, 2009). The Healthy People 2010 goals concur with the recommendation set by NASPE of 60 minutes of daily PE but also recommend that adolescents should be active 50% of their allotted PE class time (objective 22-10; U.S. Department of Health and Human Service, 2000). Based on these goals middle/junior high school students should receive 60 minutes of daily PE and spend 30 minutes of the 60 minutes in PA. Additionally, the school health index (USDHHS, 2008b) recommends that all middle school students participate in 225 minutes of structured PE each week. It has not been recommended whether the 30 minutes of recommend PA in PE should be light or MVPA. Research has suggested that the criterion of 50% of class time be spent in MVPA is ambitious and is rarely achieved during regular PE lessons (Fairclough, 2003; Levin et al., 2001; Stratton, 1997). In addition, a study conducted by Dale, Corbin, and Dale (2000) reported that adolescents who did not participate in PA at school did not compensate for a sedentary school day by increasing their PA after school. Evidence revealed that middle and particularly high school students’ habitual PA decreases over time (Biddle, Gorely, & Stensel, 2004; Biddle, Sallis, & Cavill, 1998). This reduction occurs as a result of biological, social, psychological, and environmental factors (Sallis, 2000). During the junior and particularly high school years the frequency of PE is often reduced to engage in other curricular areas (U.S. Department of Health and Human Service, 2000). This suggests that middle/junior high school could be the last opportunity for many
adolescents to become physically educated. The U.S. Department of Education (1996) reported there are nearly 14,000 middle/junior high schools in the U.S. In middle school the majority of students are enrolled in PE. However, there are few reports regarding the quantity (the amount of time spent each week in PE) and quality (instructional methods, meeting the national standards and/or objectives and amount of time in PA) of middle school PE. More studies are needed to examine whether middle school PE is meeting the national objectives (McKenzie, Marshall, Sallis, & Conway, 2000). Those studies that have been conducted used direct observation, self-report, or some type of activity instrument.

Simons-Morton, Taylor, Snider, Huang, and Fulton (1994) examined PA of children and adolescents through direct observation during PE in 13 middle schools and 20 elementary schools. This study did not implement any type of intervention. Results indicated that students in seven randomly sampled middle schools spent approximately 16.1% of class time in MVPA. Only MVPA was reported. Light PA was not determined. Based only on MVPA these results indicated that these students were well below the recommendation of 50% of class time spent in PA. However, if the study had determined light PA the classes could have been closer to the recommended 50%. It was beyond the scope of the study to determine what factors were associated with the low levels of MVPA. Factors could have included low student motivation, poor teaching skills, and lack of resources (equipment, field space).

LaMaster and Lacy (1993) examined middle school student engagement in motor tasks through the ALT-PE observation instrument. Results indicated that students only spend 14% of class time engaged in motor tasks at an appropriate level.
Fairclough and Stratton (2005a) examined PA levels of 122 high school students in England through the use of heart rate monitors. It should be noted that the students sampled were in grades seventh, eighth, and ninth and would be in middle or junior high school if this study were conducted in the U.S. Students were classified as either “high,” “average,” and or “low” ability based on their PE teachers’ evaluation. Students participated in 66 lessons over a 12-week period covering team and individual activities. The PE classes were same-sex. Results indicated that students spent 34.3% of class time in MVPA, which was equated to 17.5 minutes. Students who were rated as high ability had higher levels of MVPA than those rated as average or low ability. Boys had more time in MVPA (39.4%) than the girls (29.2%). These results also suggested that more attention should be placed on individuals who have average to low ability to increase their MVPA. This study did not compare MVPA by grade level or examine light PA.

McKenzie et al. (2000) examined student activity levels, lesson context, and teacher behavior by use of the SOFIT in 430 PE lessons taught by 126 teachers in 24 schools. Results indicated that students spent 48.5% of class time in MVPA. Boys engaged in more MVPA than girls (46.4% vs. 39.5%). The results of this study are the closest than any other study in meeting the 50% of class time in PA.

McKenzie (2001) examined activity levels of middle school students during PE class and outside of class. The results indicated that middle school students engaged in more MVPA on PE days than non-PE days. This suggests that by having daily PE adolescents will have higher levels of daily MVPA.

Fairclough and Stratton (2005b) reviewed 40 studies reporting PA of students during middle and high school PE. This review reported that during regular PE class students
engaged in MVPA around to 27% to 47% of class time. Those studies that implemented some type of intervention in a PE setting such as changing the instructional methods or environmental factors were successful in increasing MVPA among PE students. Based on the review of these studies it was recommended that in the PE setting interventions studies the interventions should be based on pedagogical and educational principles.

In conclusion, it is recommended that adolescents participate in 60 minutes of PA and more importantly be engaged in PA for 50% of the time spent in a PE class. The majority of research conducted examining PA levels of middle school students has found students do not reach the 50% goal of PA during class. However, studies that have implemented some type of intervention have been able to increase the level of PA. There are many factors that were identified by previous research that contribute to producing higher levels of PA. These factors include lesson content, teacher behavior, setting, instructional model, and student motivation. Of the studies reviewed no study used a specific instructional model that directed how the teacher taught each lesson even though instructional model has been identified as a factor that influences PA levels. Also very few studies have looked at gender specifically within coed and same-sex settings another environmental factor thought to affect PA levels. PA in regard to gender settings will be addressed in the coed and same-sex setting section of this review. This research study used the tactical games instructional model within a coed or same-sex setting to guide the research.

**Tactical Games Model**

This section is organized into four subsections: (a) historical perspective, (b) the description of the tactical games model, (c) previous research findings, and (d)
conclusions. It is important to note the current study used the tactical games model as a standard model. All lesson plans were based on this instructional model. The model itself is not being examined in this study but is being used as a control variable.

Historical Perspective

In 1982, Bunker and Thorpe introduced the Teaching Games for Understanding (TGFU) model. Teaching Games for Understanding was designed to conceptualize games teaching and learning (Thorpe & Bunker, 1986). This model was derived based on observations of game teaching lessons. These game lessons led children to little to no success, little understanding of the game, poor decision making in game situations, the development of teacher dependent performers, and the failure to develop knowledgeable spectators of sport (Thorpe & Bunker, 1986). Traditional lessons have focused on techniques and have failed to address the contextual nature of the games. The TGFU approach focuses on teaching students the “why” of the game instead of the “how” (Thorpe & Bunker, 1986). French and Thomas (1987) believed that the many mistakes that students encounter during game play are based on the lack of knowledge of what to do in the game situation. Bunker and Thorpe (1982) believed that students would be more interested and have enhanced enjoyment of sport games if they obtained the situational knowledge called tactical awareness. Tactical awareness is referred to as the ability to identify tactical problems that arise during a game and to respond appropriately (Mitchell et al., 2006).

The TGFU model originated in England, but the model has been modified and renamed by physical educators in several countries. The names include game sense, play practice, and tactical games. In the US several physical educators have collaborated with
the developers of the TGFU and have created an American version called tactical games (Metzler, 2005; Mitchell et al., 2006). For the purposes of this research the tactical games model will be used since the study was conducted in the US. The next section will give a detailed description of both the TGFU and tactical games model.

Description of the Tactical Games Model

The TGFU model follows a step-by-step procedure in which each student’s level of skill performance will vary, but each student will participate in decision making based upon tactical awareness (Thorpe & Bunker, 1986). Thus, keeping the student interested and involved in the game. The TGFU model is depicted in Figure 2.1.

The first step is the game form. The game form resembles the full adult version of the game. However, the teacher modifies the game according to the student’s age and experience. The teacher can also adjust the environment and the amount of equipment used in the game. The second step is game appreciation, which teaches children to understand the rules of the game and how these rules shape the game. The third step is tactical awareness, wherein students learn the tactics to be used in the game. The game forms provide the opportunity to implement a tactic or all tactics of the game depending on the modifications to the game. The fourth step is making appropriate decisions. During the game forms students are forced to decide how to address or implement the tactic. The fifth step is skill execution. The student then executes the appropriate skill to employ the tactic. The sixth step is performance. Students are proficient in their performance based on applying their combination of tactical and skill knowledge.

The tactical games model (see Figure 2.2) is a simplified 3-step model that is derived from the original TGFU 6 step model (Mitchell et al., 2006).
Figure 2.1 The Teaching Games for Understanding Model

Figure 2.2 The Tactical Games Model
The first step of the tactical games model is the game form, which is similar to the first step of the TGFU model. During the game form PE students’ participate in a modified version of the game that presents the students with a tactical problem. For example, a tactical problem in basketball is moving without the ball to get open to receive a pass to score. A game form for this tactical problem would be a half court basketball game modifying the rules of the original basketball game by requiring each team to make four passes before shooting and not allowing students to dribble the ball. Playing this modified version of basketball forces the students to move without the ball and to create ways to elude the defenders so they may receive a pass. The second step is tactical awareness. During this step the teacher helps students recognize the tactical problem through questioning. These questions pertain to what certain skills or movements are required to be successful. Once the students understand the skills or movements needed to be successful the teacher can ask the students what they need to practice. This leads to the third step of the tactical games model, skill execution. During this step the teacher can demonstrate and describe how to perform the skills and movements with the appropriate learning cues. Once the students have had some time to practice the appropriate skills the students go back to playing the modified game.

Research Findings

The tactical games model is a relatively newer instructional model being used in PE. To date, little research has been conducted using the tactical games model and it is difficult to know when the model can be used most effectively (Metzler, 2005).

Tactical games and student motivation and perceptions. A rationale for using the tactical games model is it provides an interesting and exciting way for PE students to
learn games and is a positive motivator for participating (Mitchell et al., 2006). When participating in skill drills students typically do not understand why they are practicing and wonder when they can play the game (Mitchell et al., 2006). Students are motivated by games and not so much by repetitive skill drills. The tactical games model uses the game structure that students are interested in and excited about to promote skill development and tactical awareness (Metzler, 2005). Previous research indicates that students find the tactical games approach to be motivational (Berkowitz, 1996; Burrows, 1986; Mitchell, Griffin, & Oslin, 1994). One teacher has indicated that students come to class excited, motivated and ready to participate because they know they are going to play a game right away (Berkowitz, 1996). This is also supported by research conducted on 5 PE teachers and 392 secondary PE students (Cruz, 2004). Results indicated that teachers perceived that their students were more engaged, excited, and happier in the tactical approach than a skill based approach. Students supported the teacher perceptions by verifying that the tactical approach was more exciting and interesting and they preferred to learn in this type of environment. It is suggested that the tactical games model provided the students with a positive emotional experience in playing games. Of the student participants, 76% indicated they would like their teacher to adopt the tactical games model for all games taught in PE (Cruz, 2004).

**Tactical games and knowledge.** The second national standard for PE states “that students should be able to demonstrate understanding of movement concepts, principles, strategies, and tactics as they apply to learning and performance of physical activities” (NASPE, 2004 pg 21). A rationale for using the tactical games model in PE is that the knowledge gained through this approach will empower students to become
knowledgeable game players (Mitchell et al., 2006). The knowledge students obtain through the use of the tactical games model is decision making in game situations. Previous research has focused on decision making and how the tactical games model has improved student decision making in game like situations. However, future research is needed to consider the tactical games model as a valid and reliable method to increase student knowledge in decision making (Turner & Martinek, 1995).

Conclusions

The tactical games model provides a unique method of teaching game tactics and strategies to PE students. Students have shown more interest and motivation to participate when the lesson follows the tactical games model. Also teachers perceive that the students were more motivated and engaged during the tactical games approach. The majority of research has focused on teacher and student perceptions, and decision making in game play. To date there is no known published research using the tactical games model or any model during instruction when examining student PA levels in coed and same-sex settings. It is important to obtain their data to compare to the national recommendation for PA in PE. The tactical games model is unique in the fact that the main focus of the model is to provide students understanding of tactics and strategy in small sided games. Students participating in small sided games should have more opportunities to respond during the game thus having higher levels of PA.

Physical Activity Measurement in Physical Education

There are various methods that have been used to measure PA in many different populations. These methods include self-report, direct observation, accelerometers,
pedometers, heart rate monitors, doubly labeled water, and indirect calorimetry (Welk, 2002). For the purposes of this research and literature review, accelerometers will be discussed as the primary tool in assessing PA.

**Accelerometers**

The use of accelerometers has become the most common way to measure field-based PA (Welk, 2002). Accelerometers are small, unobtrusive, and noninvasive instruments that provide an objective measure of overall movement (Metcalf, 2009). The accelerometer actually measures the speed or acceleration of a limb rather than the entire body movement. Factors that affect accelerometer output include positioning of the accelerometer, activity type, and orientation (Welk, 2002). It is recommended that the accelerometer be placed on the hip. By placing the accelerometer on the hip it is less obtrusive when students are sitting, walking, or performing various locomotor movements. Accelerometers should be placed consistently among all participants. A limitation with accelerometers is the ability to measure all activities equally. For example they do not differentiate among activities in which arms are in motion but the leg is stationary. There are a variety of different accelerometers available for consumer and researcher use. These accelerometers vary in size, cost, memory, software capabilities, and sensitivity. Many of these different types of accelerometers have been studied to determine their reliability and validity in measuring movement.

The most commonly used accelerometer and the one utilized in this study is the ActiGraph GT1M (Pensacola, FL). The ActiGraph has been known by several different names over the years. They are as follows: Manufacturing Technologies Inc. (MTI) and the Computer Science and Applications (CSA) monitor. Previous studies have shown the
ActiGraph to be a reliable and a valid instrument in measuring PA. Trost et al. (1998) evaluated the validity of the CSA activity monitor as a measure of PA among children. Each child examined wore two CSA monitors and were examined over 3-5 min treadmill bouts at 3, 4, and 6 mph. Results indicated that activity counts were not significantly different between the monitors and both monitors were highly correlated with energy expenditure. These results were comparable to Brage, Brage, Wedderkoop, and Froberg (2003) who found that the intrainstrument reliability was relatively good. Nichols, Morgan, Chabot, Sallis, and Calfas (2000) examined the validity of the CSA monitor in the laboratory and field. The results indicated that there was a strong relationship between the CSA counts and oxygen consumption (in the laboratory) as well as between velocity and counts (field). Kelly et al. (2004) examined the validity of the CSA and MTI WAM -7164 against direct observation. Results indicated that the output of both accelerometers and direct observation were significantly correlated.

Accelerometers have been used to measure PA levels of PE students in small sample sizes. Arnett and Lutz (2003) examined PA levels of middle school female students (N = 60). The purpose of the study was to determine if the students would meet the recommendation of MVPA to achieve cardiovascular fitness during a soccer and hockey unit with lessons centered on small sided game-based lessons. Results indicated regardless of ability classification the female PE students performed MVPA for greater than 56% of the lesson time, which is enough to improve cardiovascular fitness. These findings show that accelerometers can be used by middle school students to report MVPA.
Fairclough (2003) examined female middle school aged PE students \( (N = 20) \) PA levels in PE over an 8-month period. The PE students participated in PE twice a week in a same-sex setting. The curriculum followed a traditional sport games approach. Results indicated that the female students were engaged in MVPA for only 38.5% of the class time. This finding suggests that female students enrolled in a typical PE curriculum do not meet the recommend 50% of class time in MVPA. However, similar to Arnett and Lutz (2003) this study demonstrated that accelerometers can be used to measure PA of middle school students.

Hastie and Trost (2002) examined PA levels of middle school boys \( (N = 19) \) participating in a sport education floor hockey season. Results showed that the middle school boys engaged in MVPA for 31.6 minutes or 63.2% of lesson time. Also percentage of time spent in MVPA was not affected by skill level or phase of the sport season. Hastie and Trost concluded that under the sport education format students can reach the recommended amount of time spent in MVPA.

Conclusions

In summary, accelerometers are a small, unobtrusive, and noninvasive instruments that provide an objective measure of overall movement. In the current study the Actigraph GT1M was utilized. The Actigraph GT1M has been found to be a valid and reliable instrument in measuring PA. Accelerometers have been used to measure PA of PE students in small sample studies and have been found to be reliable, accurate and valid. However, there are no known large sample studies in PE that have utilized accelerometers as the primary instrument to measure PA.
Coeducational and Same-Sex Settings in Physical Education

An implication of Title IX (gender equity) was that PE classes would integrate same-sex classes into coed classes. This occurred because the thought was that males were receiving more or better opportunities to learn than females. By forming coed PE classes the females would be receiving the same opportunities as the males thus meeting the Title IX requirements of gender equity. Teachers were given limited opportunity to provide their input on the situation or be active participants in the legislation process (Treanor, Graber, Housner, & Wiegand, 1998). Many schools today offer same-sex or coed PE classes. Although forming coed classes was based on gender equity little research has been conducted examining PA levels of students in coed and same-sex PE classes. Most of the literature has focused on students’ perceptions of same-sex versus coed classes, motivation, self-efficacy, and skill development. There is a limited amount of literature regarding activity levels of males and females in both types of classes. Although many schools have coed PE classes, which are supposed to provide more opportunity for females, research has shown that females are characterized to have lower participation rates, less opportunity to practice sport skills, and low instructional interaction with the teacher (Eccles & Harold, 1991). The main focus of the current study was to determine student PA levels in coed and same-sex settings. This review will mainly focus on PA levels but will also include a review of other topics pertaining to coed and same-sex PE. This section is organized into two subsections: (a) PA levels, and (b) other related literature.
PA Levels

There is limited research measuring student PA levels in coed and same-sex settings in PE. With the increased importance placed on adolescent PA and the recommendations set by the U.S. Department of Health and Human Services (2000), measuring PA of PE students should be a major priority for teachers, researchers, and policy makers (Hannon & Williams, 2008).

Schmitt (2002) examined PA levels of male and female PE students in coed and same-sex settings using heart rate monitors. Participants were from an urban elementary school. Forty-eight participants (24 male, 24 female) wore heart rate monitors and participated in 30 minutes of game play for 6 days in an ultimate Frisbee unit. Participants participated for 3 days in a coed setting and the other 3 days in a same-sex setting. Heart rate was recorded at the beginning, middle, and end of each lesson. Results indicated that male heart rates were high at the beginning, middle, and end in both settings. Males spent 8.3 minutes in their target heart rate zones for the same-sex setting and 7.9 minutes in the coed setting. Females spent 5.8 minutes in the same-sex setting and 6.2 minutes in the coed setting. Although the sample size was small results suggest that males are more active than females. Also, females are more active in the coed setting. This study was limited by the fact that ultimate Frisbee was a new activity for the participants thus there might have been a learning effect. Also, this study only examined the game play portion of the PE lesson.

McKenzie et al. (2004) reported similar results. The purpose of their study was to examine middle school student PA levels and lesson context in coed and same-sex settings. Twenty-four schools participated in an activity and nutrition program in
Southern California. Of the 24 schools, 9 of the schools provided classes in a same-sex format. The sample included 298 lessons taught by PE specialists. Boys \( n = 26 \) and girls \( n = 32 \) participated in 240 coed PE lessons. The average scheduled class length was 50 minutes. The System for Observing Fitness Instruction Time (SOFIT) was used to observe each lesson to determine student PA levels. During each lesson the observers would randomly select 4 students and code their activity. Codes 1-4 (Lying down, sitting, standing, and walking) describe the students’ body position and code 5 (very active) identifies when students are expending more energy than walking. The observers coded the students’ activity using momentary time sampling (observe for 10 seconds, record intervals for 10 seconds). MVPA was calculated by summing codes 4 and 5. Results indicated that the boys only \( M = 19.2 \) and coed classes \( M = 17.6 \) provided more MVPA than the girls only \( M = 13.2 \) classes. Boys obtained similar amounts of MVPA in coed and same-sex classes. Girls had more MVPA in coed classes than same-sex settings. In the coed classes boys (19.3 minutes) spent more time in MVPA than girls (15.9 minutes). Despite using a different measurement technique and population these results support the finding of Schmitt (2002). A limitation to this study was the use of only 4 students per lesson and momentary time sampling. Only observing 4 random students per lesson might not constitute a true representation of the population. By using the 10-second observe and 10-second record interval half of each lesson was not observed. Results from this study are based on half of the class time.

Hannon and Ratcliffe (2005) examined the effects of coed and same-sex game-play settings on the activity levels of high school PE students. Participants consisted of 209 high school PE students in 6 intact PE classes at a Northwestern Florida high school.
Three experienced physical educators (1 male and 2 female) taught all PE classes. The students participated in three sport units (flag football, ultimate Frisbee, and soccer). Of the 6 classes 2 were coed, 2 were coed classes that were split into male only and female only for game play, 1 was a female only class, and 1 a male only class. All participants wore Digi-walker pedometers to measure their PA levels during game play. Activity levels were calculated as steps per minute. Results indicated that the males had higher step counts than females in all gender settings and sport units. Unlike the results of Schmitt (2002) and McKenzie et al. (2004) there were no differences in activity levels for females in coed or same-sex game play settings. A limitation of this study was the use of pedometers, which were not able to estimate time spent in MVPA. This study was also limited to only flag football, ultimate Frisbee, and soccer and cannot be generalized to other sports and to all populations.

Overall, these studies have found that males are more active than females in either the coed or same-sex setting. Girls tended to be more active in the coed class setting except for the study conducted by Hannon and Ratcliffe (2005), which found no differences between the two settings. There is little to no difference in activity levels for males regarding coed or same-sex class settings. These results are contrary to many qualitative studies regarding teacher and student perceptions. The results from the previous three studies are consistent based on elementary, middle school and high school students, across various types of activities and the use of different PA measurement instruments. The three studies only examined PA of students in game play or for half of the PE lesson and were limited to a few sports. Future research should investigate an entire PE lesson,
a variety of individual/team sports, and the use of an instructional model to guide the lessons.

**Other Related Literature**

The majority of research regarding same-sex and coed PE has focused on students’ perceptions of same sex versus coed classes, motivation, self-efficacy, and skill development. Treanor et al. (1998) were interested in examining middle school students’ perceptions of coed and same sex PE classes. Treanor and colleagues found that males and females perceived that they performed skills better, received more practice opportunities, competed harder, learned more, behaved better, and were less fearful of injury in same sex PE classes. According to these results it would be beneficial to student learning to have same-sex PE class.

Lirgg (1993) examined the self-perceptions of middle and high school students in same-sex versus coed PE. It was found that middle school students preferred same-sex classes and high school students preferred coed classes. However, those students who had been in same-sex classes were more likely to prefer same-sex classes than those enrolled in coed classes. The same results were found with the Treanor et al. (1998) study. These results indicated that although students are still in the maturation phase in middle school, same-sex PE should be offered. However, in the high school students are more sociable and are noticing the opposite sex. Coed classes could end up more as a social event rather than meeting educational goals.

In the 1999 January issue of the *Journal of Physical Education Recreation and Dance* the Issues section proposed the question “Should physical education classes return to teaching males and females separately?” All of the responses from PE specialists were in
support of noncoed classes. One specialist indicated that the classes are grossly imbalanced in terms of gender. For example, one class had a majority of male students and a few females and the other class was the opposite (Keinman, 1999). Another specialist indicated that classes need to be same-sex classes so girls can be girls without worrying and being pressured by the boys to win the activity rather than to enjoy the activity. The specialist also indicated that tentative females would have more success in an all female class (Rhyan, 1999). Those respondents who indicated that PE should be coed were only university or college professors. The reasons were, but were not limited to: allowing males and females to learn and interact socially, appreciate the characteristics and abilities of the opposite sex, and PE outcomes are not dependent on gender (Colgate, 1999; Davis, 1999; Docheff, 1999). This shows that the perceptions of same-sex and coed classes vary between individual PE teachers.

Conclusion

In summary, limited research has been conducted regarding PA levels of male and female students in a coed and same-sex setting (Hannon & Ratliffe, 2005; McKenzie et al., 2004; Schmitt, 2002). Studies have been limited to game play, and a small number of specific activities. Further research is needed to explore more activities and activity levels of students throughout the entire lesson in coed and same-sex settings.

Conclusions

In summary, regular participation in PA can provide adolescents immediate physical and psychological health benefits (USDHHS, 2008a). Numerous studies have shown that PE students are not receiving adequate amounts of PA. This could be influenced by
many factors such as settings (coed versus same-sex), instructional model, type of activities, and grade level of the student. There is limited PA research in regard to coed and same-sex settings. It was identified that no coed and same-sex PA study examined PA levels of entire PE lessons following a particular instructional model within basketball and volleyball sport units. Also no studies examined entire PE lessons. Thus this research study proposed exploring 32 PE lessons that followed the tactical games model, in coed and same-sex settings, in four different content areas (basketball, volleyball, flag football, and soccer) in grades 7-9.
CHAPTER 3

METHODS

The purpose of this study was to examine PA levels of junior high school PE students participating in coed and same-sex PE classes that follow the tactical games model over basketball, soccer, flag football, and volleyball units. This chapter describes the participants and setting, instrumentation, methodological procedures, and statistical analysis that were used in this study.

Participants and Setting

PE students (N = 446) enrolled in seventh, -eighth, -and ninth-grade PE classes were recruited from a junior high school in northern Utah. School enrollment totaled 644 students (324 males, 320 females). Racial and ethnic distribution of the entire school consisted of 92.1% Caucasian and 7.9% from other ethnic backgrounds. Male (n = 240) and female (n = 206) participants in the study ranged in age from 11 to 16 years. Data for age, grade, gender, ethnicity, and sport participation of the participants in this study are presented in Table 3.1. Participants participated in four sport units (basketball, volleyball, flag football, and soccer). These sports were chosen because they are typical sports that are taught during a semester in physical education. Also, previous research examining PA in coed and same-sex settings have only examined flag football, and soccer and not volleyball or basketball. Table 3.2 shows the sample size for each unit by
Table 3.1

Students’ Age, Grade and Sport Participation by Gender and Race

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>Age</th>
<th>7th Grade</th>
<th>8th Grade</th>
<th>9th Grade</th>
<th>Participates in Sport</th>
<th>No Sport Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Females:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian:</td>
<td>140</td>
<td>13.01 ± .88</td>
<td>50</td>
<td>41</td>
<td>49</td>
<td>16</td>
<td>124</td>
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<td>Asian American:</td>
<td>7</td>
<td>13.14 ± 1.21</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Pacific Islander:</td>
<td>3</td>
<td>13.00 ± 1.00</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>3</td>
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<tr>
<td>Biracial:</td>
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<td>13.16 ± .85</td>
<td>6</td>
<td>9</td>
<td>10</td>
<td>1</td>
<td>25</td>
</tr>
<tr>
<td>African-American:</td>
<td>5</td>
<td>13.20 ± .84</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Hispanic/Latino:</td>
<td>24</td>
<td>13.21 ± 1.02</td>
<td>11</td>
<td>2</td>
<td>11</td>
<td>2</td>
<td>22</td>
</tr>
<tr>
<td>Other:</td>
<td>2</td>
<td>12.50 ± .71</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td>206</td>
<td>13.06 ± .90</td>
<td>73</td>
<td>59</td>
<td>74</td>
<td>20</td>
<td>186</td>
</tr>
<tr>
<td><strong>Males:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>192</td>
<td>13.18 ± .915</td>
<td>62</td>
<td>61</td>
<td>69</td>
<td>31</td>
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<td>8</td>
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<td>13.56 ± .73</td>
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</tr>
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<td>5</td>
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<td>African-American:</td>
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<td>13.38 ± .92</td>
<td>4</td>
<td>11</td>
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</tr>
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<td>Hispanic/Latino:</td>
<td>24</td>
<td>13.00 ± 1.41</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Other:</td>
<td>1</td>
<td>13.00 ± 1.41</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
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<td><strong>Total:</strong></td>
<td>240</td>
<td>13.21 ± .91</td>
<td>72</td>
<td>80</td>
<td>89</td>
<td>33</td>
<td>207</td>
</tr>
<tr>
<td><strong>Totals:</strong></td>
<td>446</td>
<td>13.14 ± .907</td>
<td>144</td>
<td>139</td>
<td>163</td>
<td>53</td>
<td>393</td>
</tr>
</tbody>
</table>

Mean ± Standard Deviation
Table 3.2

Sample Size for each Sport Unit
by Grade and Gender with Both Settings Combined

<table>
<thead>
<tr>
<th>Sport Unit</th>
<th>Grade level</th>
<th>Coed &amp; Same-sex Settings Combined</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Males</td>
<td>Females</td>
</tr>
<tr>
<td>Basketball:</td>
<td>7th</td>
<td>66</td>
<td>68</td>
</tr>
<tr>
<td></td>
<td>8th</td>
<td>75</td>
<td>59</td>
</tr>
<tr>
<td></td>
<td>9th</td>
<td>82</td>
<td>68</td>
</tr>
<tr>
<td></td>
<td>All</td>
<td>223</td>
<td>195</td>
</tr>
<tr>
<td>Volleyball:</td>
<td>7th</td>
<td>68</td>
<td>69</td>
</tr>
<tr>
<td></td>
<td>8th</td>
<td>77</td>
<td>59</td>
</tr>
<tr>
<td></td>
<td>9th</td>
<td>78</td>
<td>68</td>
</tr>
<tr>
<td></td>
<td>All</td>
<td>223</td>
<td>196</td>
</tr>
<tr>
<td>Flag Football:</td>
<td>7th</td>
<td>71</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>8th</td>
<td>76</td>
<td>59</td>
</tr>
<tr>
<td></td>
<td>9th</td>
<td>85</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>All</td>
<td>232</td>
<td>199</td>
</tr>
<tr>
<td>Soccer:</td>
<td>7th</td>
<td>68</td>
<td>72</td>
</tr>
<tr>
<td></td>
<td>8th</td>
<td>75</td>
<td>59</td>
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</tr>
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<td>225</td>
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</tbody>
</table>
grade and gender for both settings combined. Table 3.3 shows the sample size for each unit by grade and gender in separate settings. Each unit was eight lessons in length. Table 3.4 shows the average lesson time for each sport by class period.

Two experienced PE teachers, one male and one female, conducted all PE classes. The male teacher was in his early 50s with 22 years of teaching experience. He graduated from an accredited PE program at a Southwestern United States university and earned a PE teaching K-12 certification. He has also completed a Master’s degree in PE. The female teacher was in her fifties with 20 years of teaching experience. She graduated from a large private Southwestern United States university and earned a degree in PE teaching K-12 certification. Both teachers had no previous experience with the tactical games model.

Permission to conduct the study was obtained from the University Institutional Review Board, the Davis School District, the school administration, and the teachers prior to the start of this study (see Appendix A). The students provided written informed assent and parents provided written informed consent prior to participation in this study (see Appendix B).

**Instrumentation**

**Demographics Survey**

Several demographic questions were created for this study. For the PE students these questions included the participants’ sex, age, grade, and ethnicity. For the PE teachers these questions included the participants’ sex, age, ethnicity, years of teaching experience, and highest degree earned (See Appendix C).
Table 3.3

Sample Size for each Sport Unit
by Grade and Gender in Separate Settings

<table>
<thead>
<tr>
<th>Sport Unit</th>
<th>Grade level</th>
<th>Coed Class</th>
<th>Same-sex Class</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Males</td>
<td>Females</td>
</tr>
<tr>
<td>Basketball:</td>
<td>7th</td>
<td>31</td>
<td>40</td>
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<tr>
<td></td>
<td>8th</td>
<td>35</td>
<td>38</td>
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<td>9th</td>
<td>38</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>All</td>
<td>104</td>
<td>113</td>
</tr>
<tr>
<td>Volleyball:</td>
<td>7th</td>
<td>33</td>
<td>41</td>
</tr>
<tr>
<td></td>
<td>8th</td>
<td>36</td>
<td>38</td>
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<tr>
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<td>105</td>
<td>113</td>
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<tr>
<td>Flag</td>
<td>Football:</td>
<td>7th</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8th</td>
<td>41</td>
</tr>
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<td></td>
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<td>9th</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>All</td>
<td>123</td>
</tr>
<tr>
<td>Soccer:</td>
<td>7th</td>
<td>36</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>8th</td>
<td>40</td>
<td>21</td>
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<tr>
<td></td>
<td>9th</td>
<td>41</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td>All</td>
<td>117</td>
<td>89</td>
</tr>
</tbody>
</table>
Table 3.4

Average Lesson Time for each Sport by Class Period

<table>
<thead>
<tr>
<th>Sport Unit</th>
<th>Class Period</th>
<th>1st</th>
<th>2nd</th>
<th>3rd</th>
<th>4th</th>
<th>6th</th>
<th>7th</th>
<th>All</th>
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<tbody>
<tr>
<td>Basketball:</td>
<td></td>
<td>31</td>
<td>28.5</td>
<td>27</td>
<td>27</td>
<td>29</td>
<td>26.5</td>
<td>28.15</td>
</tr>
<tr>
<td>Volleyball:</td>
<td></td>
<td>30.5</td>
<td>27</td>
<td>26</td>
<td>25.5</td>
<td>27.5</td>
<td>28.5</td>
<td>27.5</td>
</tr>
<tr>
<td>Flag Football:</td>
<td></td>
<td>31.5</td>
<td>28.5</td>
<td>28.5</td>
<td>28.5</td>
<td>30</td>
<td>31</td>
<td>29.65</td>
</tr>
<tr>
<td>Soccer:</td>
<td></td>
<td>31</td>
<td>28</td>
<td>28</td>
<td>28.5</td>
<td>30</td>
<td>30</td>
<td>29.25</td>
</tr>
<tr>
<td>Total:</td>
<td></td>
<td>31</td>
<td>28</td>
<td>27.4</td>
<td>27.4</td>
<td>29.15</td>
<td>29</td>
<td>28.65</td>
</tr>
</tbody>
</table>

Note. Time is in minutes.

Accelerometers

The ActiGraph GT1M (Pensacola, FL) accelerometers were used to monitor PA levels during participation in PE class over four tactical game units. The use of accelerometers has become the most common way to measure field-based PA (Welk, 2002).

Accelerometers are small, noninvasive, and provide an objective measure of overall movement. Accelerometers can be used to assess the frequency, duration, intensity, and energy expenditure of PA (Welk, Corbin, & Dale, 2000). The ActiGraph GT1M (Pensacola, FL) accelerometer has been studied to determine its reliability and validity in measuring movement. Various studies have reported favorable validity of ActiGraph accelerometers by comparing the ActiGraph outputs with direct observation of the
participants during activity and or direct measures of energy expenditure (Kelly et al., 2004; Puyau, Adolph, Firoz, & Butte, 2002). Due to the rapid advancement in accelerometer technology very few studies have reported the reliability of the ActiGraph GT1M accelerometer. However, studies of the previous ActiGraph Model 7164 reported favorable inter and intra unit reliability (McClain, Sisson, & Tudor-Locke, 2007).

Corder, Brage, Ramachandran, Wareham, and Ekelund (2007) compared the new ActiGraph GT1M model to the old 7164 model. Results indicated that the output of the two models was highly correlated when using the monitors with adolescents. The ActiGraph GT1M uses a uniaxial accelerometer to sample vertical accelerations that range between 0.05 to 2.0g. The ActiGraph has 1 megabyte of non volatile flash memory, which supports 364 days of stored activity count data. The ActiGraph utilizes a rechargeable battery that must be recharged every 14 days.

Accelerometers are limited in the assessment of upper body activities such as throwing, catching, carrying, and lifting (Welk, et al., 2000a & b). Recent studies have determined that accelerometers significantly underestimate energy expenditure (Bassett, et al., 2000; Hendleman, Miller, Bagget, Debold, & Freedson, 2000; Welk, Blair, Wood, Jones, & Thompson, 2000). However, assessing energy expenditure was not the purpose of this study. Although there are several limitations, accelerometers are one of the most useful instruments to assess PA over long periods of time (Welk et al., 2000a & b).

The most common approach to PA field base research is to use “cutpoints” to determine the amount of time spent in different activity intensity categories (Welk et al., 2000). In this study the Puyau et al. (2002) cut-point equations were applied to the data to determine the percent of class time spent in light, and moderate to vigorous PA.
intensity classifications. The cut-points for all classifications were based on a 30-second epoch and are as follows: light = 401-1599, moderate + vigorous = ≥ 1600 (Puyau et al., 2002). The percent of class time spent in light, and the combined classification of moderate + vigorous PA (MVPA) was derived for each student from each lesson. Using “cutpoints” is limited in assessing the amount of time spent in different activity intensity categories in the fact that “cutpoints” underestimate activity levels of adolescents if they are established based on number counts recorded during continuous activity (Welk et al., 2000). Accelerometers summarize the total movement counts at a specific end time. For example a 1-minute epoch will summarize the movement counts for every minute of the activity. If there are short periods of MVPA the time could be obscured due to resting periods (Dale, 1999). To avoid the underestimation of activity levels Welk et al. (2000), recommend the use of time intervals or epochs less than 1 minute. The current study used 30-second intervals or epochs to control for underestimation.

The ActiGraph accelerometers were initialized prior to data collection. This procedure required setting a start time and date. In addition, the epoch length of 30 seconds and the activity count and pedometer modes were activated. Finally, a data file name was inserted that served as a participant identification code.

Prior to the start of data collection the students were instructed on how to properly attach and wear the accelerometer. Students were instructed to clip the elastic belt with the accelerometer around their waists and place the accelerometer on their right hips at the midaxillary line. This site was suggested by the manufacturer and has been used by many investigators because it has been found to be well suited to detect movements of many different locomotor patterns (Welk, 2002). The primary researcher and teachers
observed each student to ensure the students were wearing their accelerometers correctly. The students were instructed not to tamper with the accelerometers. The students had 4 days during an ultimate Frisbee mini unit to practice retrieving, attaching, wearing, and returning the accelerometer prior to the beginning of the four full length units. Each student was assigned a number that was correlated to the number on the accelerometer. Students used the same accelerometer throughout the entire study. At the conclusion of the study the students and teachers received a report of how much activity they engaged in throughout the four units.

**Tactical Game Lessons**

The tactical games lesson plans for the basketball, soccer, and volleyball units for this study were selected from the textbook *Teaching Sport Concepts and Skills: A Tactical Approach* (Mitchell et al., 2006). The flag football unit and the ultimate Frisbee mini unit (practice unit) lesson plans were designed by the primary investigator and checked by the primary author of the *Teaching Sport Concepts and Skills: A Tactical Approach* textbook. A progression of tactical levels from 1 to 3 was used in the eight lesson plans for each unit. A progression of levels were used based on the fact that PE students in the area of the country in which the study took place may not have had a required PE class in elementary school and may have been limited in certain foundational skills required for game execution. Appendix D contains all lesson plans for the four units and mini unit.
Research Design

A quasi-experimental design was used to examine the effect of coed and same-sex settings using the tactical games approach on the percent of class time spent in light, and MVPA of Junior high school PE students.

Data Collection Procedures

After approval from the University Institutional Review Board, the school district, and the junior high school administrators, the PE teachers were contacted to seek permission to conduct this study using all their PE classes. Permission was granted, and a day and time were arranged to meet with the physical educators 3 weeks prior to the start of school. At this time the physical educators were given information about the study and another date was established for the teachers to undergo training in the tactical games model. The physical educators went through two sessions (approximately 6 hours) of tactical games training prior to the beginning of the study. Training consisted of lectures, readings, and watching video clips of other teachers using the tactical games model. The teachers were provided with all the lesson plans for each unit being taught during this training. The same lesson plans were used by each teacher to assure similarity between all classes. The physical educators were given the protocols that were taught to the students in regard to the process of wearing the accelerometer. These trainings were conducted by the primary researcher.

Once the training was completed the physical educators taught one unit (ultimate Frisbee) at the beginning of the semester. During this time the primary investigator evaluated each teacher on their performance of the tactical games model by using the Systematic Observation for the Tactical Approach to Games (SOTAG; Sweeney, Everitt,
& Griffin, 2006) and by following the lesson plan. The primary investigator attended class by each teacher to ensure that each lesson plan was being followed properly. Also the SOTAG indicated teacher behavior during the lessons. The SOTAG described the lesson context, teacher interaction, and teacher question usage that occurred during the tactical approach lesson. Also the SOTAG indicated if the teachers were asking appropriate questions. It was confirmed that the teachers were properly following the tactical games model.

Students were taught how to wear an accelerometer by the primary investigator. All accelerometers were worn around the waist on the right hip. A specific amount of time was allotted a few days prior to data collection for students to learn the procedures of how to wear an accelerometer and the collection and return procedures of the accelerometers. Students were assigned an accelerometer number and wore that same accelerometer for all four units. Signs were posted with student names and assigned accelerometer numbers. Prior to getting in their roll call lines students put on their accelerometers. Accelerometers were placed on a numbered folder on the gym bleachers. The number on the accelerometer corresponded with the number on the folder. During the last 5 minutes of class students were instructed to place their accelerometers back on top of the folder that had the same corresponding number where the students picked up their accelerometers at the beginning of class. At the completion of each week the primary researcher downloaded the accelerometer data and checked that each accelerometer was working properly. All accelerometers were recharged at the end of each week.
Each participant participated in two sport units in a coed setting and two sport units in the same-sex setting. There was a total of six class periods with one male and one female PE class per period (12 PE classes). There were four seventh-grade, four eighth-grade, and four ninth-grade PE classes. Classes were randomly determined as coed or same-sex. For example, first period was selected as same-sex. The male teacher taught the all male class and the female teacher taught the all female class. Second period was determined as coed. The all male and all female classes were integrated and divided in half and the male teacher taught half the class while the female teacher taught the other half. After two of the sport units were taught the coed classes were separated back into same-sex classes and the other same-sex classes were integrated and split into coed classes. This allowed all participants to participate in either type of setting. However, not every participant participated in each sport unit in each setting. Each teacher taught six classes a day (three coed and three same-sex).

Data Reduction and Statistical Analysis

Data from the accelerometers was downloaded according to the manufacturer’s instructions using ActiLife Lifestyle Monitoring Software (Version 1.0.54, Actigraph, LLC., Pensacola, FL) and exported into an Excel file at the end of each week. Each accelerometer potentially held data for 6 participants. Primary and secondary researchers then cut and pasted the specific lessons for each student from the first excel file into the participants individually assigned excel file. Once this was completed for all students primary and secondary researchers entered formulas in the excel program to calculate the percentage of time spent in each activity category (light, and MVPA), and then calculated the average for all eight lessons of each sport unit. Once that was completed all the
information of each student was put into one excel file and imported into the SPSS statistics program. All data entered by secondary researchers were checked by the primary researcher and a secondary researcher checked all data entered by the primary researcher to confirm the accuracy of the data entry.

Statistical analysis for all data in this study was conducted on a personal computer using SPSS version 16.0 (SPSS, Chicago, IL, USA). Preliminary analyses included descriptives, frequencies, reliabilities, and correlations. Alpha coefficients were computed to determine the internal consistency between lessons for each PA category (light, and MVPA). Alpha coefficients ranged from .80 to .95 showing a high reliability between the lessons and PA categories. This justified use of all data regardless of days attended by each student during each unit and the averages of each PA category of each unit was used rather than examining each lesson individually.

Four three-way between-subjects analyses of variance were conducted to evaluate the effect of gender, class setting (coed or same-sex), and grade on PE students’ PA levels for each sport unit. The dependent variables were the percentage of time spent in light, and MVPA. The between-subjects factors were setting with two levels (coed and same-sex), gender with two levels (male and female) and grade with three levels (seventh, eighth, and ninth grade). An alpha level of .05 was used for all statistical tests.
CHAPTER 4

RESULTS AND DISCUSSION

This study investigated PA levels as measured by accelerometers of junior high school PE students participating in coed and same-sex PE classes that follow the tactical games model over basketball, soccer, flag football, and volleyball units.

Results

Primary Aim and Hypothesis

The primary aim was to compare the PA levels, as measured by accelerometers, of junior high school male and female students participating in coed or same-sex PE class settings during soccer, flag football, basketball, and volleyball units using the tactical games model. It was hypothesized that male junior high school students would accumulate similar amounts of light and MVPA, as measured by accelerometers, in coed or same-sex PE settings regardless of activity. It was hypothesized that female junior high school students would be more active in coed than same-sex PE regardless of activity. It was hypothesized that male junior high school students would be more active than female junior high school students in both coed and same-sex PE settings regardless of activity. Also, PA levels (light and moderate-to-vigorous) by grade level (seventh, eighth, and ninth) were explored.
Reliabilities

Alpha coefficients were computed to determine the internal consistency for all lessons (eight per activity) for each activity and for all 32 lessons combined. Table 4.1 presents the alpha coefficients for each PA category (light, and moderate + vigorous PA) of each sport unit (basketball, volleyball, flag football, and soccer). All lessons for each activity achieved adequate reliability, with alphas ranging from .80 to .95. Table 4.2 presents the alpha coefficients for each PA category (Light, and moderate + vigorous PA) for all 32 lessons. All 32 lessons achieved adequate reliability with alphas ranging from .64 to .88.

Table 4.1

*Alpha Coefficients for each Activity*

<table>
<thead>
<tr>
<th>Sport Unit</th>
<th>Physical Activity Category</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basketball</td>
<td>Light</td>
<td>.86</td>
</tr>
<tr>
<td></td>
<td>Moderate + Vigorous</td>
<td>.93</td>
</tr>
<tr>
<td>Volleyball</td>
<td>Light</td>
<td>.91</td>
</tr>
<tr>
<td></td>
<td>Moderate + Vigorous</td>
<td>.90</td>
</tr>
<tr>
<td>Flag Football</td>
<td>Light</td>
<td>.84</td>
</tr>
<tr>
<td></td>
<td>Moderate + Vigorous</td>
<td>.95</td>
</tr>
<tr>
<td>Soccer</td>
<td>Light</td>
<td>.80</td>
</tr>
<tr>
<td></td>
<td>Moderate + Vigorous</td>
<td>.92</td>
</tr>
</tbody>
</table>
Table 4.2

*Alpha Coefficients for All Thirty-Two Lessons*

<table>
<thead>
<tr>
<th>Physical Activity Category</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light</td>
<td>.64</td>
</tr>
<tr>
<td>Moderate + Vigorous</td>
<td>.88</td>
</tr>
</tbody>
</table>

**Primary Analysis**

A three-way between-subjects analysis of variance was conducted to evaluate the effect of gender, class setting (coed or same-sex), and grade level on PE students’ PA levels. The dependent variable was the percentage of time spent in light, and MVPA. The between-subjects factors were setting with two levels (coed and same-sex), gender with two levels (male and female), and grade with three levels (seventh, eighth, and ninth grade). The Setting, Gender, and Grade main effect and Setting x Gender, Setting x Grade, Gender x Grade, and Setting x Gender x Grade interaction effect were tested using the multivariate criterions of Wilk’s Lambda (Λ). This analysis was conducted separately for the basketball, volleyball, flag football, and soccer units. The MANOVA assumptions were examined prior to conducting the MANOVAs. The data met the assumption that the independent variables were categorical and the dependent variables were continuous. The data were assessed for normality. Histograms and stem and leaf charts demonstrated that the data for light and MVPA were normally distributed for each activity. Scatter plots of the dependent variable demonstrated linearity. The sample size of the data set was adequate along with the groups being equal in size.
Basketball Analysis

There was a significant main effect of Setting, $A = .93$, $F(2, 405) = 15.48$, $p < .01$, as well as Gender, $A = .80$, $F(2, 405) = 51.09$, $p < .01$, and Grade, $A = .98$, $F(4, 810) = 2.63$, $p < .033$. The Setting x Gender interaction effect was significant, $A = .91$, $F(2, 405) = 20.42$, $p < .01$. An independent-samples $t$-test was conducted to determine the specific difference between setting for each gender. Results indicated a significant difference between settings for female students for percentage time spent in light, $t(193) = 6.63$, $p = .01$, and MVPA, $t(193) = 4.18$, $p = .01$ (see Figure 4.1 and 4.2). There was no significant difference between percentages of time spent in the two PA categories between settings for male students. The main effects of setting and gender were not explored further because the main effects were superseded by the setting x gender interaction and results might not be valid.

A Tukey’s post hoc analysis was conducted for Grade and indicated a significant difference in the MVPA category between the seventh ($M = 20.70$, $SD = 12.98$) and ninth grades, ($M = 17.64$, $SD = 12.59$; see Table 4.3 and 4.4 for means and standard deviations). This suggests that during the basketball unit seventh-grade students spent more time in MVPA than ninth-grade students during the basketball unit.

A Setting x Gender x Grade interaction effect was not significant, $A = .99$, $F(4, 810) = 1.39$, $p = .24$, as well as Gender x Grade $A = .99$, $F(4, 810) = 1.45$, $p = .22$, and Setting x Grade, $A = .98$, $F(4, 810) = 1.93$, $p = .10$. 
Figure 4.1 Percentage of Time Spent in Light Activity in the Basketball Unit by Setting and Gender

Figure 4.2 Percentage of Time Spent in MVPA in the Basketball Unit by Setting and Gender
Table 4.3  

*Percentage of Class Time Spent in each of the Two Intensity Levels During the Basketball Unit: By Grade and Gender for each Setting*

<table>
<thead>
<tr>
<th>Activity Level</th>
<th>Grade Level</th>
<th>Coed Class</th>
<th>Same-sex Class</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Males</td>
<td>Females</td>
</tr>
<tr>
<td>Light:</td>
<td>7th</td>
<td>41.62 ± 9.82</td>
<td>36.91 ± 11.26</td>
</tr>
<tr>
<td></td>
<td>8th</td>
<td>42.36 ± 9.68</td>
<td>30.65 ± 12.60</td>
</tr>
<tr>
<td></td>
<td>9th</td>
<td>40.84 ± 10.41</td>
<td>35.14 ± 14.54</td>
</tr>
<tr>
<td></td>
<td>All</td>
<td>41.59 ± 9.92</td>
<td>*34.26 ± 12.96</td>
</tr>
<tr>
<td>Moderate +</td>
<td>7th</td>
<td>28.20 ± 11.32</td>
<td>12.69 ± 6.60</td>
</tr>
<tr>
<td></td>
<td>9th</td>
<td>23.69 ± 13.04</td>
<td>10.15 ± 7.94</td>
</tr>
<tr>
<td></td>
<td>All</td>
<td>24.37 ± 12.29</td>
<td>*10.65 ± 6.68</td>
</tr>
</tbody>
</table>

Mean ± Standard Deviation

*p < .05
Table 4.4

Percentage of Class Time Spent in each of the Two Intensity Levels During the Basketball Unit: By Grade and Gender with Both Settings Combined

<table>
<thead>
<tr>
<th>Activity level</th>
<th>Grade level</th>
<th>Coed &amp; Same-sex Settings Combined</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Males</td>
</tr>
<tr>
<td>Light:</td>
<td>7th</td>
<td>42.44 ± 9.54</td>
</tr>
<tr>
<td></td>
<td>8th</td>
<td>41.98 ± 9.52</td>
</tr>
<tr>
<td></td>
<td>9th</td>
<td>39.46 ± 12.17</td>
</tr>
<tr>
<td></td>
<td>All</td>
<td>41.19 ± 10.61</td>
</tr>
<tr>
<td>Moderate +</td>
<td>7th</td>
<td>27.68 ± 12.31</td>
</tr>
<tr>
<td>Vigorous:</td>
<td>8th</td>
<td>22.50 ± 11.76</td>
</tr>
<tr>
<td></td>
<td>9th</td>
<td>22.27 ± 13.47</td>
</tr>
<tr>
<td></td>
<td>All</td>
<td>23.95 ± 12.75</td>
</tr>
</tbody>
</table>

Mean ± Standard Deviation

* $p < .05$

Volleyball Analysis

The Setting main effect was significant $A = .98, F(2, 406) = 4.21, p < .02$, as well as Gender $A = .79, F(2, 406) = 53.31, p < .01$. The Setting x Gender interaction effect was significant, $A = .97, F(2, 406) = 6.88, p < .01$, as well as Setting x Grade, $A = .98, F(4, 812) = 2.58, p = .04$. An independent-samples $t$-test was conducted to determine the specific difference between setting for each gender. Results indicated a significant difference between settings for female students for time spent in light PA, $t(194) = 4.06, p = .01$. There was no significant difference between percentages of time spent in MVPA for female students in either setting (see Figure 4.3). Thus female students in a same-sex setting spent less time in light PA than female students in a coed setting. There was no significance between the two settings in regard to MVPA. There was no significant difference between percentages of time spent in the two PA categories between settings
Figure 4.3 Percentage of Time Spent in Light Activity in the Volleyball Unit by Setting and Gender

for male students. An independent-samples t-test was conducted to determine the specific difference between setting for each grade level. Results indicated a significant difference between settings in light activity for the seventh-graders \( t(135) = 3.35, p = .01 \) and eighth-graders \( t(134) = 2.88, p = .01 \) (see Figure 4.4) and a significant difference between settings for MVPA for the seventh-graders \( t(135) = 1.62, p = .03 \) (see Figure 4.5). The seventh- and eighth-graders in a same-sex setting spent more time in light PA than in a coed setting. The seventh-graders in a same-sex setting spent more time in MVPA than in a coed setting. There was no significance among the ninth-graders in regard to setting in light and MVPA. The main effects of setting and gender were not explored further because the main effect was superseded by the setting x gender interaction and the results might not be valid. Means and standard deviations are displayed in Table 4.5 and 4.6.
Figure 4.4 Percentage of Time Spent in Light Activity in the Volleyball Unit by Setting and Grade

Figure 4.5 Percentage of Time Spent in MVPA in the Volleyball Unit by Setting and Grade
Table 4.5

*Percentage of Class Time Spent in each of the Two Intensity Levels During the Volleyball Unit: By Grade and Gender for each Setting*

<table>
<thead>
<tr>
<th>Activity level</th>
<th>Grade level</th>
<th>Coed Class</th>
<th>Same-sex Class</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Males</td>
<td>Females</td>
</tr>
<tr>
<td>Light:</td>
<td>7th</td>
<td>44.93 ± 11.85</td>
<td>32.59 ± 12.42</td>
</tr>
<tr>
<td></td>
<td>8th</td>
<td>46.08 ± 12.59</td>
<td>28.21 ± 11.60</td>
</tr>
<tr>
<td></td>
<td>9th</td>
<td>46.79 ± 14.73</td>
<td>31.48 ± 13.51</td>
</tr>
<tr>
<td></td>
<td>All</td>
<td>45.96 ± 13.04</td>
<td>*30.78 ± 12.53</td>
</tr>
<tr>
<td>Vigorous:</td>
<td>8th</td>
<td>11.40 ± 7.82</td>
<td>5.54 ± 1.72</td>
</tr>
<tr>
<td></td>
<td>9th</td>
<td>10.32 ± 8.39</td>
<td>5.89 ± 4.38</td>
</tr>
<tr>
<td></td>
<td>All</td>
<td>11.10 ± 8.01</td>
<td>5.80 ± 3.24</td>
</tr>
</tbody>
</table>

Mean ± Standard Deviation

*p < .05
Table 4.6

Percentage of Class Time Spent in each of the Two Intensity Levels During the Volleyball Unit: By Grade and Gender with Both Settings Combined

<table>
<thead>
<tr>
<th>Activity level</th>
<th>Grade</th>
<th>Coed &amp; Same-sex Settings Combined</th>
<th>Males</th>
<th>Females</th>
<th>Both</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light:</td>
<td>7th</td>
<td>47.09 ± 11.31</td>
<td>35.68 ± 11.60</td>
<td>41.34 ± 12.77</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8th</td>
<td>45.31 ± 12.04</td>
<td>32.98 ± 13.13</td>
<td>39.96 ± 13.90</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9th</td>
<td>43.76 ± 14.28</td>
<td>32.49 ± 12.64</td>
<td>38.51 ± 14.62</td>
<td></td>
</tr>
<tr>
<td></td>
<td>All</td>
<td>45.31 ± 12.68</td>
<td>33.76 ± 12.45</td>
<td>39.91 ± 13.82</td>
<td></td>
</tr>
<tr>
<td>Moderate +</td>
<td>7th</td>
<td>12.72 ± 8.71</td>
<td>6.18 ± 3.66</td>
<td>9.43 ± 7.40</td>
<td></td>
</tr>
<tr>
<td>Vigorous:</td>
<td>8th</td>
<td>10.68 ± 7.17</td>
<td>5.95 ± 2.23</td>
<td>8.63 ± 6.05</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9th</td>
<td>9.76 ± 7.99</td>
<td>5.61 ± 3.56</td>
<td>7.83 ± 6.64</td>
<td></td>
</tr>
<tr>
<td></td>
<td>All</td>
<td>10.98 ± 8.01</td>
<td>5.92 ± 3.25</td>
<td>8.61 ± 6.74</td>
<td></td>
</tr>
</tbody>
</table>

Mean ± Standard Deviation

* p < .05

Setting x Gender x Grade interaction effect was not significant, Λ = .99, \( F(4, 812) = 1.02, \ p = .40 \), as well as Gender x Grade, Λ = .99, \( F(4, 812) = .87, \ p = .48 \), and the main effect for Grade Λ = .98, \( F(4, 812) = 2.03, \ p < .09 \).

Flag Football Analysis

There was a significant main effect of Gender, Λ = .56, \( F(2, 418) = 163.56, \ p < .01 \), as well as Grade, Λ = .88, \( F(4, 836) = 13.52, \ p < .01 \). The Setting main effect was not significant, Λ = .99, \( F(2, 418) = 2.86, \ p = .06 \). The Setting x Gender x Grade interaction effect was significant, Λ = .96, \( F(4, 836) = 4.06, \ p < .01 \). A univariate ANOVA was conducted to evaluate the relationship of Setting, Gender, and Grade for time spent in light activity. The dependent variable was the percentage of time spent in light activity. The independent variables were setting (coed and same-sex) and gender (male and
female) and grade (seventh, eighth, and ninth). Results indicated a significant interaction of setting x gender for the seventh grade $F(1,137) = 4.67, p = .03$, eighth grade $F(1,131) = 4.46, p = .04$, and ninth grade $F(1,151) = 5.58, p = .02$ (see Figure 4.6, 4.7, and 4.8). A follow-up independent $t$-test was conducted to evaluate the difference between the means for each grade. Results for the seventh grade indicated a significant difference among females in the coed ($M = 50.63$) and same-sex ($M = 43.63$) settings. Results for the eighth grade indicated a significant difference among females in coed ($M = 43.10$) and same-sex ($M = 47.99$) settings. Results for the ninth grade indicated a significant difference among females in coed ($M = 40.05$) and same-sex ($M = 44.88$) settings (see Table 4.7 and 4.8 for means and standard deviations). For female students in the seventh grade the coed setting produced a higher percentage of time in light activity. However, eighth-grade and ninth-grade female students had a higher percentage in light activity in the same-sex setting. Results indicated that setting made a difference between female students light activity depending on grade level. No significant differences were found among male students. For male students setting made no difference for percentage of time spent in light activity in regard to grade level.

The Setting x Grade interaction effect was significant, $\Lambda = .93, F(4, 836) = 8.36, p < .01$. An independent-samples $t$-test was conducted to determine the specific difference between setting for each grade. Results indicated a significant difference between settings for seventh-grade students for light PA, $t(139) = -3.60, p = .01$. Results indicated that seventh-grade students in a coed setting had more percentage of time in light PA than seventh-grade students in a same-sex setting. For eighth and ninth grade there was no significance between settings for the two PA categories. This suggests that there is no
Figure 4.6 Percentage of Time Spent in Light Activity in the Football Unit for the Seventh Grade by Setting and Gender

Figure 4.7 Percentage of Time Spent in Light Activity in the Football Unit for the Eighth Grade by Setting and Gender
Figure 4.8 Percentage of Time Spent in Light Activity in the Football Unit for the Ninth Grade by Setting and Gender
Table 4.7

Percentage of Class Time Spent in each of the Two Intensity Levels During the Football Unit: By Grade and Gender for each Setting

| Activity level | Grade level | Coed Class | | Same-sex Class | |
|----------------|-------------|------------|----------------|----------------|
|                |             | Males | Females | Both | Males | Females | Both |
| Light:         | 7th         | 48.07 ± 8.97 | *50.63 ± 5.37 | *49.17 ± 7.69 | 46.29 ± 6.98 | *43.63 ± 6.26 | *44.82 ± 6.68 |
|                | 8th         | 45.68 ± 7.93 | *43.10 ± 6.01 | 44.81 ± 7.39 | 45.31 ± 7.61 | *47.99 ± 5.68 | 46.71 ± 6.77 |
|                | 9th         | 41.78 ± 7.61 | *40.05 ± 8.98 | 41.03 ± 8.22 | 40.89 ± 7.45 | *44.88 ± 5.56 | 42.78 ± 6.88 |
|                | All         | 44.97 ± 8.49 | 44.39 ± 8.50 | 44.74 ± 8.48 | 44.00 ± 7.68 | 45.45 ± 6.10 | 44.74 ± 6.93 |
| Vigorous:      | 8th         | 24.76 ± 10.23 | 11.65 ± 6.65 | 20.32 ± 11.06 | 27.34 ± 9.92 | 12.54 ± 5.89 | 19.64 ± 10.94 |
|                | 9th         | 25.19 ± 13.09 | 9.11 ± 5.42 | 18.27 ± 13.16 | 30.63 ± 11.18 | 12.51 ± 7.39 | 22.05 ± 13.17 |
|                | All         | 25.67 ± 11.71 | 11.38 ± 6.57 | 19.91 ± 12.17 | 29.00 ± 10.40 | 12.43 ± 6.39 | 20.46 ± 11.91 |

Mean ± Standard Deviation  
*p < .05
Table 4.8

*Percentage of Class Time Spent in each of the Two Intensity Levels During the Football Unit: By Grade and Gender with Both Settings Combined*

<table>
<thead>
<tr>
<th>Activity level</th>
<th>Grade level</th>
<th>Coed &amp; Same-sex Settings Combined</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Males</td>
<td>Females</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Light:</td>
<td>7th</td>
<td>47.22 ± 8.07</td>
<td>46.43 ± 6.82</td>
<td>46.83 ± 7.46</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8th</td>
<td>45.51 ± 7.74</td>
<td>46.25 ± 6.22</td>
<td>45.84 ± 7.10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9th</td>
<td>41.36 ± 7.50</td>
<td>42.54 ± 7.76</td>
<td>41.90 ± 7.62</td>
<td></td>
</tr>
<tr>
<td></td>
<td>All</td>
<td>44.51 ± 8.12</td>
<td>45.01 ± 7.20</td>
<td>44.74 ± 7.70</td>
<td></td>
</tr>
<tr>
<td>Moderate +</td>
<td>7th</td>
<td>27.99 ± 10.79</td>
<td>12.94 ± 6.44</td>
<td>20.52 ± 11.65</td>
<td></td>
</tr>
<tr>
<td>Vigorous:</td>
<td>8th</td>
<td>25.94 ± 10.11</td>
<td>12.22 ± 6.13</td>
<td>19.95 ± 10.96</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9th</td>
<td>27.75 ± 12.46</td>
<td>10.86 ± 6.68</td>
<td>20.12 ± 13.26</td>
<td></td>
</tr>
<tr>
<td></td>
<td>All</td>
<td>27.23 ± 11.21</td>
<td>12.00 ± 6.47</td>
<td>20.20 ± 12.03</td>
<td></td>
</tr>
</tbody>
</table>

Mean ± Standard Deviation

*p < .05*
difference in setting in regard to percentage of time spent in the two PA categories for eight-and ninth-graders (see Figure 4.6, 4.7, and 4.8).

There was no significant difference in percentage of time spent in MVPA. This indicates that setting made no difference among males and females in any of the three grades for MVPA. This result suggests that the percentage of time spent in light activity is influenced by setting, grade, and sex but setting does not influence MVPA during a flag football unit.

The main effects of gender and grade were not explored further because the main effects were superseded by the setting x gender x grade and or setting x grade interactions and results might not be valid. Gender x Grade was not significant, $A = .99, F(4, 836) = .57, p = .69$, as well as Setting x Gender, $A = .99, F(2, 418) = 1.24, p = .29$.

**Soccer Analysis**

The Setting main effect was significant, $A = .97, F(2, 417) = 6.37, p < .01$, as well as Gender, $A = .71, F(2, 417) = 86.32, p < .01$, and Grade, $A = .97, F(4, 834) = 3.19, p < .01$.

The Setting x Grade interaction effect was significant, $A = .94, F(4, 834) = 6.22, p < .01$ (See Figure 4.9 and 4.10). An independent-samples $t$-test was conducted to determine the specific difference between setting for each grade. Results indicated for the seventh-and eighth-grade students there was no significance in setting between the two PA categories. This suggests that there is no difference in setting in regard to time spent in the two PA categories. There was a significant difference between ninth-grade students for percentage of time spent in light PA, $t(154) = 2.09, p = .04$, and MVPA $t(154) = 3.36, p = .001$. These results suggest that ninth-grade students in a same-sex setting spent more time in light and MVPA than those ninth-grade students in a coed setting.
Figure 4.9 Percentage of Time Spent in Light Activity in the Soccer Unit by Setting and Grade

Figure 4.10 Percentage of Time Spent in MVPA Activity in the Soccer Unit by Setting and Grade
The main effects of setting and grade were not explored further because the main effects were superseded by the setting x grade interaction and results might not be valid. However, there was no interaction with the main effect of gender. Males ($M = 26.81$, $SD = 10.57$) spent significantly more time in MVPA than females ($M = 15.78$, $SD = 7.18$), $p = .01$ (See Table 4.9 and 4.10 for means and standard deviations). These results suggest that during soccer unit males will spend more time in MVPA than females.

The Setting x Gender x Grade interaction effect was not significant, $A = .99$, $F(4, 834) = .79$, $p = .53$, as well as Gender x Grade, $A = .99$, $F(4, 834) = .68$, $p = .62$, and Setting x Gender, $A = .99$, $F(2, 417) = .24$, $p = .79$.

Summary of Results for Research Hypotheses

Research Hypothesis One

Research hypothesis one stated that male junior high school students would accumulate similar amounts of PA, as measured by accelerometers, in coed or same-sex PE settings regardless of the activity. As hypothesized, male junior high school students accumulated similar amounts of PA in coed and same-sex settings during the basketball, volleyball, flag football, and soccer units.

Research Hypothesis Two

Research hypothesis two stated that female junior high school students would be more active in coed versus same-sex PE regardless of activity. The basketball unit results contradicted this hypothesis. Female junior high school students had higher levels of light and MVPA in a same-sex setting than in a coed setting. The volleyball unit results supported this hypothesis. Female junior high school students had higher levels of light PA in a
Table 4.9

*Percentage of Class Time Spent in each of the Two Intensity Levels During the Soccer Unit: By Grade and Gender for each Setting*

<table>
<thead>
<tr>
<th>Activity Level</th>
<th>Grade level</th>
<th>Coed Class</th>
<th>Same-sex Class</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Males</td>
<td>Females</td>
</tr>
<tr>
<td>Light:</td>
<td>7th</td>
<td>43.81 ± 7.37</td>
<td>45.15 ± 7.76</td>
</tr>
<tr>
<td></td>
<td>8th</td>
<td>41.98 ± 7.37</td>
<td>40.80 ± 7.55</td>
</tr>
<tr>
<td></td>
<td>9th</td>
<td>38.82 ± 8.31</td>
<td>40.95 ± 8.52</td>
</tr>
<tr>
<td></td>
<td>All</td>
<td>41.42 ± 7.92</td>
<td>42.38 ± 8.21</td>
</tr>
<tr>
<td>Moderate +</td>
<td>7th</td>
<td>27.35 ± 9.28</td>
<td>16.81 ± 7.20</td>
</tr>
<tr>
<td></td>
<td>9th</td>
<td>23.95 ± 11.88</td>
<td>12.29 ± 5.76</td>
</tr>
<tr>
<td></td>
<td>All</td>
<td>25.82 ± 10.73</td>
<td>14.35 ± 6.78</td>
</tr>
</tbody>
</table>

Mean ± Standard Deviation

*p < .05
Table 4.10

Percentage of Class Time Spent in each of the Two Intensity Levels During the Soccer Unit: By Grade and Gender with Both Settings Combined

<table>
<thead>
<tr>
<th>Activity level</th>
<th>Grade level</th>
<th>Coed &amp; Same-sex Settings Combined</th>
<th>Males</th>
<th>Females</th>
<th>Both</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light:</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7th</td>
<td></td>
<td>43.96 ± 6.61</td>
<td>43.40 ± 6.15</td>
<td>43.67 ± 6.36</td>
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</tr>
<tr>
<td>8th</td>
<td></td>
<td>42.76 ± 7.21</td>
<td>42.69 ± 6.78</td>
<td>42.73 ± 7.00</td>
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</tr>
<tr>
<td>9th</td>
<td></td>
<td>40.26 ± 8.28</td>
<td>42.11 ± 7.41</td>
<td>41.13 ± 7.91</td>
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</tr>
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<td>All</td>
<td></td>
<td>42.21 ± 7.58</td>
<td>42.73 ± 6.79</td>
<td>42.46 ± 7.21</td>
<td></td>
</tr>
<tr>
<td>Moderate +</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7th</td>
<td></td>
<td>26.98 ± 8.62</td>
<td>16.36 ± 6.35</td>
<td>21.52 ± 9.21</td>
<td></td>
</tr>
<tr>
<td>8th</td>
<td></td>
<td>26.28 ± 11.35</td>
<td>15.93 ± 7.17</td>
<td>21.72 ± 10.99</td>
<td></td>
</tr>
<tr>
<td>9th</td>
<td></td>
<td>27.15 ± 11.38</td>
<td>15.09 ± 7.95</td>
<td>21.43 ± 11.57</td>
<td></td>
</tr>
<tr>
<td>All</td>
<td></td>
<td>26.81 ± 10.57</td>
<td>15.78 ± 7.18</td>
<td>21.55 ± 10.64</td>
<td></td>
</tr>
</tbody>
</table>

Mean ± Standard Deviation

*p < .05

doed setting than in a same-sex setting. The flag football unit grade influenced whether setting had an effect on the hypothesis. Seventh-grade female students had more time in light activity in the coed setting than the same-sex setting. Eighth- and ninth-grade female students had more time in light PA in a same-sex setting than a coed setting. All three grade levels were similar in the amounts of time spent in each of the two PA categories during coed and same-sex settings. For the soccer unit there was no difference among female students’ activity levels in coed or same-sex settings.

Research Hypothesis Three

Research hypothesis three stated that male junior high school students would be more active than female junior high school students in both coed and same-sex PE settings
regardless of activity. For the basketball, volleyball, flag football, and soccer unit the hypothesis was supported. Males had more time in MVPA than females.

Research Hypothesis Four

Research hypothesis four stated that seventh-grade students would spend a higher percentage of time in light and MVPA than the eighth- and ninth-grade students and the eighth-grade students would spend a higher percentage of time in light and MVPA than the ninth-grade students regardless of activity. For the basketball unit this hypothesis was supported partially. The seventh-grade students spent a higher percentage of time in MVPA than the ninth-grade students. The soccer and flag football unit indicated a difference among grade level however; further analysis was not conducted because the variable of grade interacted with other variables.

Discussion

The primary aim of this study was to determine PA levels as measured by accelerometers of junior high school PE students participating in coed and same-sex PE classes that follow the tactical games model over basketball, soccer, flag football, and volleyball units. However, the effect of environmental factors, such as the sex of the participant, the setting (same-sex or coed), grade level, and instructor’s choice of activity on the level of light and MVPA was so variable that the discussion will be broken down by activity. Even though three of the activities (basketball, football and volleyball) had statistically significant gender by setting interactions and three activities (football, soccer, and volleyball) had statistical significant setting by grade interactions, none of the patterns of interaction were similar in terms of optimizing PA levels. For educators who
want to promote and increase physical activity levels in junior high school PE programs using a tactical games approach, a variety of activities will have to be built into the curriculum. The variability of the results is not totally unexpected given the developmental changes occurring during junior high school.

Junior High School PE Students PA During a Basketball Unit

Activity levels by setting. Results from this study indicate that male junior high PE students accumulated similar amounts of light and MVPA, in coed and same-sex PE settings during the basketball unit. The results of this study are comparable to those reported by McKenzie et al. (2004) who examined 26 boys only, 32 girls only, and 240 coed lessons in 24 middle schools over a 2.5-year investigation. Their findings revealed that boys accumulated similar amounts of MVPA in boys only and coed class settings. Only MVPA was reported. Similarly, Hannon and Ratliffe (2005) examined male high school PE students’ PA in same-sex and coed settings during flag football, ultimate Frisbee, and soccer game play. Their findings revealed that male students had similar amounts of PA in same-sex and coed settings. The McKenzie et al. (2004) and Hannon and Ratliffe (2005) studies were different than the current study in that they used different methods to measure PA (pedometers, direct observation), did not follow a particular instructional model and either measured MVPA or total PA rather than measuring light and MVPA. Although basketball was not investigated or reported by either study, one could assume that basketball would be similar to soccer, flag football, and ultimate Frisbee because all four are team sports and are classified as invasion games. Also Fromel, Formankova, and Sallis (2002) reported that male students preferred team sports and when these team sports were played in a coed setting males
would dominate game play. Thus one would assume the males would receive the same amount of activity in either setting because females would not hinder them in a game play situation. Hill and Hannon (2008) surveyed 750 middle school PE students on activity preferences for PE. Results indicated 70.1% of boys preferred basketball. Basketball was the second most preferred sport. In the current study it is assumed that males accumulated similar amounts of activity due to the fact that basketball is one of the top sports they prefer to play and males dominate game play during team sports. This is just speculation as the current study did not examine activity preferences of the PE students.

Results indicate that female students had higher levels of light PA, and MVPA in a same-sex setting than in a coed setting during the basketball unit. Contradictory to the findings of this study McKenzie et al. (2004) reported that females had higher levels of PA in a coed setting. However, the lesson context was unknown. Similarly, Hannon and Ratliffe (2005) found that high school females had no difference in levels of PA in either setting during invasion games. No coed and same-sex setting study examined basketball as one of the activities. Activity preference could have influenced activity levels of females during the basketball unit. However, Hill and Hannon (2008) surveyed middle school PE students to determine activity preferences. Results indicated that 64.3% of females preferred basketball (the fifth highest preference). If basketball is in the top five of girls preferred sports to play one could assume girls would like playing basketball and they would have higher activity level regardless of setting. However, in the same study basketball was the second highest preferred activity among male students (Hill & Hannon, 2008). The result of this current study suggests that settings are more likely to
play a role in PA of female PE students. As reported earlier male PE students prefer team sports which could lead to dominating game play or drills (Fromel et al., 2002). Female PE students have reported that when in enrolled in a coed PE class boys would take over, their PA levels were lower, they viewed coed classes as inequitable and unpleasant, boys were not cooperative, and boys felt that the females did not exhibit enough effort during activity (Derry, 2002; Olafson, 2002; Osborne, Bauer & Sutliff, 2002; & Taylor et al., 1999). These statements provide potential insight as to why the female students in the current study had lower levels of PA in the coed setting. This study was limited to all ability levels. The ability levels of the participants could have affected the results of this study.

**Activity levels by grade level.** Results indicate that during the basketball unit seventh-graders spent more time in MVPA than ninth-graders. The US Department of Health and Human Services (1996) has indicated that student PA levels decline with increasing age and grade level during adolescence. Gao, Hannon, and Carson (2008) examined 146 middle school PE students average heart rate and percentage of time spent above their target heart zone. Results indicated that students’ average heart rate and percentage of time spent above their target heart zone declined from sixth grade to eighth grade. Similarly, Parish and Treasure (2003) examined middle school PE students and also found that PA levels decline from the sixth to the eighth grade. Kulinna, Martin, Lai, Kilber, and Reed (2003) examined mean heart rates of PE students from grades 3 through 12. No specific analysis was made to look at mean heart rates of PE students in seventh and ninth grade specifically. However, overall results did indicate that PE students in elementary and high school spent more time in the target heart rate zone than middle
school students. The results of the current study support previous research findings indicating that PA levels decline with age and grade level. However, The U.S. National Risk Behavior Survey (2008) indicated that more adolescents met the recommended levels of PA participation in the ninth grade then in the school years following ninth grade. This indicates that younger students value or like activity more. This could be the same reasoning for seventh-graders having spent a higher percentage of time in MVPA than ninth-graders during a basketball unit. There were no significant differences among other grades in regard to light, and MVPA during the basketball unit. Further research is needed exploring activity levels of PE students in specific grades specifically the seventh through ninth grades. Nothing particular happened in the lessons during the basketball unit that might have affected the results.

**Junior High School PE Students PA During a Volleyball Unit**

**Activity levels by setting.** Results indicated that male junior high PE students accumulated similar amounts of both light and MVPA, in coed and same-sex PE settings during the volleyball unit. This result is supported by the research conducted by McKenzie et al. (2004) and Hannon and Ratcliffe (2005) that male students have similar activity levels regardless of setting. Details of these studies were reported earlier in the basketball unit section. The current study was the first to examine PA levels of males in coed and same-sex settings while participating in volleyball.

Results indicated that there was no significant difference between percentages of time spent in MVPA for female PE students in either a coed or same-sex setting. Indicating that in either setting during a volleyball unit female students’ are expected to spend similar amounts of time in MVPA. The reason that females had similar MVPA levels in
both settings could be due to the popularity of volleyball for females and the little attraction males have toward volleyball. According to Hill and Hannon (2008) volleyball was the third most preferred activity among middle school female students, whereas volleyball was not among the middle school male students top five activities. Because volleyball is not a preferred choice of male students and is preferred by females, the males most likely try not to dominate game play. Griffin (1981) and Solomons (1980) reported that in team games males had more opportunities to touch the ball than females and females would tend to give up their opportunities to score or touch the ball to male students. However, because MVPA levels were similar between the settings for female students it is assumed that males did not take away opportunities to score or touch the ball and dominate the game. Bischoff (1982) reported that during volleyball play that female participation was affected by the sex ratio of the team. If the team consisted of a majority of females the females would dominate game play or opportunities to participate and vice versa. In the current study each coed team was divided equally by gender. Because volleyball is more of a female specific sport it was assumed that no matter the setting the female students would have equal percentage of time in the two activity categories (Hannon, Soohoo, Reel, & Ratliffe, 2009). Another explanation for similarities of MVPA among females in both settings was due to teacher interactions. Because volleyball is more of a female preferred activity the teachers could have interacted more with the female students in the coed setting. Previous studies examining the relationship between student PA levels and teacher interactions found that the more interactions a significant increase in MVPA will occur (Schuldheisz & Van der Mars, 2001; Van der Mars, Vogler, Darst, & Cusimano, 1998). Teacher interactions could have
affected the MVPA among female students. However, this is purely speculation based on results from previous studies. A limitation of this study was the lack of control for teacher interactions.

Results did indicate that there was a difference between light activity for female students in coed and same-sex settings. Female students in a same-sex setting spent more time in light PA than female students in a coed setting. Based on the results of this study the same-sex setting would be ideal for females because they would be able to maintain the same amount of MVPA but also have higher percentage of time in light activity. The difference between settings for percentage of time spent in light PA contradicted the results of Hannon and Ratcliffe (2005) and McKenzie et al. (2004). However, these studies did not examine volleyball or any other type of net/wall game.

Results indicated there was a difference in percentage of time spent in light, and MVPA for the seventh-graders. In a same-sex setting seventh-graders had a higher percentage of time spent in light and MVPA than seventh-graders in a coed setting. Based on this study this result suggests to PE teachers that to achieve high levels of light and MVPA when teaching a volleyball unit to seventh-graders the best setting would be the same-sex setting. Also, results suggest there was a difference in percentage of time spent in light PA for the eighth-graders. In a same-sex setting eighth-graders had a higher percentage of time spent in light PA than eighth-graders in a coed setting. This result suggests to PE teachers that to achieve high levels of light PA when teaching a volleyball unit to eighth-graders the best setting would be the same-sex setting. Results indicated there was no difference in light or MVPA in either setting for ninth-graders.
Suggesting that in either setting during a volleyball unit ninth-graders will spend the same amount of time in light and MVPA.

**Junior High School PE Students PA During a Flag Football Unit**

**Activity levels by setting, gender, and grade level.** Results indicated that seventh-grade female students’ spent more percentage of time in light activity in the coed setting than the same-sex setting. Eighth and ninth-grade female students spent a greater percentage of time in light activity in the same-sex setting than the coed setting. Results for the seventh-grade female students’ were the opposite of the eighth-and ninth-graders. There was a difference between grade and setting for percentage of time in light PA during flag football for female students. Setting made a difference between female PE students light activity depending on grade level. As hypothesized there was no difference in light activity among male students in either grade level or setting. PE teachers would see the same results in light PA in coed or same-sex setting.

There were no differences in percentage of time spent in MVPA for setting, gender or grade. This indicates that setting made no difference among males and females in any of the three grades for MVPA. This result suggests that the percentage of time spent in light activity is influenced by setting but setting, grade level or gender does not influence MVPA during a flag football unit.

Hannon and Ratliffe (2005) examined male students’ activity levels in a game play situation during flag football in coed and same-sex settings and found that male’s activity levels are similar in either setting. McKenzie et al. (2004) examined middle school male students and found that males accumulated similar amounts of PA in either setting. There is no supporting research why seventh-grade females had more time in light
activity in the coed setting and eighth-and ninth-grade female students had the opposite. Healthy People 2010 (USDHHS, 2000) has recommended that PE students be active 50% of class time. Although the current study shows differences in setting for light activity there was no difference in MVPA. If the goal of physical educators is to have 50% of class time in MVPA then based on the results of this study setting had no influence on MVPA.

**Junior High School PE Students PA During a Soccer Unit**

**Activity levels by setting and grade level.** Results indicated there was no difference in light or MVPA in either setting for seventh- and eighth-graders. This result suggests that setting had no influence on activity during soccer for the seventh and eighth grades. For ninth-grade students there was a difference in percentage of time spent in light, and MVPA. In a same-sex setting ninth-graders had a higher percentage of time spent in light and MVPA than ninth-graders in a coed setting. Based on this study this result suggests to PE teachers that to achieve high levels of light and MVPA when teaching a soccer unit to ninth-graders the best setting would be the same-sex setting.

**Activity levels by gender.** Results of this study indicated that male students spent more time in MVPA than females during the soccer unit. Similarly, Hannon and Ratcliffe (2005) found that male students had more steps per minute than females did during soccer game play.

**General Discussion**

In examining physical activity levels of adolescences there are many issues that may factor or influence the outcomes of a study. Particularly in this study there are many
sociological issues that could have influenced the participants that could have affected the results of the data analysis. One issue is gender socialization. Gender socialization is when a specific gender is instructed or influenced to behave a certain way. Traditionally females are influenced to be passive submissive and nurturing whereas males are influenced to be aggressive, active, and independent (Birns, 1976). Based on these behaviors sport participation is based on whether the activity is considered socially acceptable for a specific gender. For example, it might not be considered feminine to be aggressive during a flag football activity. Thus this perception would negatively influence a female student’s PA level. Many of the activities selected in the current study were some type of invasion game that required students to be actively aggressive to score. During soccer, basketball, and flag football there were many opportunities for students to make some sort of physical contact during the game play. These games would support the typical aggressive behaviors that males demonstrate. When playing these types of activities in a coeducational setting one would assume females would take on their passive role and have less activity because males are so aggressive. However, if we place the female students in a same-sex setting we would expect them to have the same passive characteristics but more willingness to participate and increase levels of PA because the aggressive participants (males) were removed. Volleyball and soccer are a gender neutral sport. However, results of this study indicated the females had higher levels of PA in the same-sex setting for volleyball and soccer. One would think that females would have had the same amount of PA in both settings because volleyball and soccer are gender neutral. Because the males are more aggressive and females are more submissive males tend to dominate the game or activities. Thus the same-sex setting
would be the optimal setting for PE. The sport activities selected in this study were based on a typical junior high curriculum. These activities are typically taught in a junior high curriculum.

Another influence that could have affected both genders PA is previous sport experience. In this particular school district and state there is no requirement to have a certified PE teacher in the elementary school. Many of these junior high students in this study did not receive physical education in elementary school from a certified PE teacher. For this reason many of the students might not have been exposed to the proper skills needed to be successful in the activities chosen in this study. Also parents can influence whether their son or daughter participates in sport. This information was not obtained in the current study. However, if some of the students have had more opportunities to participate in sport the likelihood of them participating in class with high levels of PA is more than those who have not had the sport experience. For the age of these participants there are organized sports in all activities selected in this study. However, there are no organized male volleyball teams or female flag football teams in the community.

This study examined the PA levels as measured by accelerometers of junior high school PE students participating in coed and same-sex PE classes that follow the tactical games model over basketball, soccer, flag football, and volleyball units. There were many factors that could have affected the results of this study that were not controlled and some could not have been controlled. These factors include adolescent development and teacher and student behavior.

During this study the primary investigator observed all 32 lessons to verify whether the teachers were following the lesson plans that were provided. For each activity the
primary investigator would observe the teachers twice using the SOTAG observation instrument to verify the teachers were following the tactical games model. The SOTAG provides information regarding teacher interactions, and questioning that occurred during the lesson. The data showed for this study that teachers would ask the minimal questions that were provided for them on the lesson plan. The teachers would rarely add any more questions than what were provided. There was a difference between how the two teachers interacted with their students during the lesson. The female teacher provided much more feedback than the male teacher. Overall it was perceived that the female teacher was a more effective teacher. The female teacher would demonstrate and provide more feedback to her students than the male teacher. This is merely speculation because teacher effectiveness was not controlled and limited SOTAG data were collected. Through the observations of all the lessons the primary investigator felt that all students preferred the female teacher over the male teacher.

This study examined junior high school students who were between the ages of 11 and 16 years. During this time adolescents are going through many physical and psychological changes. Santrock (2005), and Payne and Isaacs (2008) define adolescence as a transition between childhood and adulthood which involves a rapid change in biological, cognitive, social, and emotion. These changes involve 6 years or approximately one-third of a person’s growing period. The changes vary from person to person and between sexes (Payne & Issacs, 2008). Because adolescence varies per individual the defined ages of 9-18 years of age represent adolescence (Payne & Issacs, 2008; Santrock, 2005). The specific physical changes that occur during adolescence are an increase in height and weight, growth of the heart and lungs, and the development of
sexual characteristics. These physical changes during adolescence is called puberty. Males typically being their height growth spurt around the age of 11 and this growth spurt declines around age 15. Females begin their growth spurt around age 9 and growth in height begins to decline at age 13. The growth spurt in height lasts on average about 4 years for males and females. Males typically reach their maximum adult height at age 18 and females at age 16. The peak height velocity when males and females have the greatest increase in height occurs during age 13 and 11, respectively. Males and females during puberty will gain approximately 50% of their adult body weight during adolescence. Males begin their weight spurt around age 11 and females around age 10. Males will finish their weight spurt around age 14 whereas females will finish around age 16. The peak weight velocity when females and males have the greatest increase in weight occurs during age 12 and 13, respectively. The dramatic changes in height and weight among male and female adolescents were occurring to the sample that was being examined during this study. As one can visually see the drastic changes in height and weight among females one cannot visually see the dramatic changes in the heart and lungs during adolescence. The dramatic growth in the heart and lungs during adolescence is the primary factor in the increase in functional capacity among adolescents (Rowland, 2005). During adolescence the heart increases one-half in size and almost doubles in weight (Malina, Bouchard, & Bar-Or, 2004). Growth of the lungs is similar to the growth of the heart during adolescence (Gallahue & Ozmun, 2006). The respiratory capacity of the lungs increases rapidly during adolescence. The growth of the heart and lungs could affect the functional capacity of each individual during activity. During adolescence sex characteristics begin to appear and the development of sex organs begin
to mature. All of these physical changes occur during the ages of 9-18. Due to these changes adolescents typically are self-conscious about their bodies, appearance, and abilities (Harrison, Blakemore, & Buck, 2001). The sample used in this study was between the ages of 11-16. The majority of these physical changes were occurring to the sample of this study. These changes could have affected the participants’ capacity to perform skills and activities at optimal levels.

Other than the physical changes during adolescences, adolescents experience many emotional issues as well. During adolescence adolescents typically experience many rapid changes in their moods. In the early years of adolescence males typically become more irritable, aggressive, and impulsive. During this same time period female adolescents tend to react with more depressed moods (Zirpoli, 2008). Larson, Csikszentmihalyi, and Graef (1980) determined that changes in mood among adolescents were dependent on what the adolescents were doing. Because the activities and modified games were different for each day in the study the participants could have had many different changes in mood towards the activities or games. Thus this could be a reason why one student would have high PA in one activity and lower activity in the other. Besides activity the setting (coed or same-sex) could have affected the participants’ mood and desire to put forth effort thus increasing or decreasing PA levels in either setting. Although adolescents are and can be moody and angered easily they tend to be eager to try new things (Harrison et al., 2001). If some of the activities and or modified games that were introduced to the participants in this study were new to the participants the newness could have influenced the eagerness to participate or not participate in the activities. Also, adolescents tend to be very competitive (Harrison et al., 2001). This
supports the use of the tactical games model because the model is game oriented and the students are involved in competition more often than other instructional models.

During adolescence adolescents go through many cognitive changes. Specifically adolescents have greater memory and problem solving skills and an increased attention span, which enables to them to handle complex concepts (Harrison, Blakemore, & Buck, 2001; Zirpoli, 2008). This supports the use of the tactical games model. The tactical games model has student’s problem solve strategies and tactics in a game setting. This gives them the opportunity to use their developing problem solving skills. Also the tactical games model provides students with opportunity to learn the complexities or the why of the games.

Limitations of the Study

The following limitations were recognized for this study:

1. Participants were junior high school PE students located in the Southwestern region of the United States and may not reflect the population of junior high school PE students in the United States.

2. Participants were selected through convenience. Participants included any student from North Layton Junior High School who enrolled in the team sports/life time activities courses in the fall semester of 2008.

3. Teachers lacked extensive experience in the tactical games model. To compensate for this lack of experience they were required to participate in a seminar focusing on the tactical games model and practiced using this model in one unit prior to the beginning of this study.
4. There was no measurement conducted to control or measure the differences between the two teachers in regard to teacher effectiveness.

5. There were only four sports (basketball, volleyball, flag football and soccer) used in this study. The results of this study only reflect these sports and may not reflect other sports.

6. The primary researcher was unable to control the skill level of each participant for the four sports used in this study. Some participants could have had more experience playing these sport activities than other participants due to organized community leagues.

**Strengths of the Study**

The following are strengths of this study:

1. The use of a standard instructional model.
2. The use of structured lessons.
3. The large sample size of junior high PE students.
4. The use of four different sport units (Basketball, Volleyball, Flag Football, and Soccer) in a coed and same-sex setting. This is strength because it adds more sports that have been examined to the coed and same-sex setting literature.
5. The use of accelerometers to measure student PA in a large sample. There are very few studies that have examined PA with accelerometers in a field-based setting.
6. Examining junior high PE students’ PA for entire lessons and units.
CHAPTER 5

SUMMARY, FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The purpose of this study was to compare PA levels of junior high school PE students participating in coed and same-sex PE classes that follow the tactical games model over basketball, soccer, flag football, and volleyball units. The participants were 446 junior high school PE students enrolled in the seventh, eighth, and ninth grade. Two experienced PE teachers, one male and one female conducted all PE lessons.

Students participated in four sport units (basketball, volleyball, flag football, and soccer). Each unit was eight lessons in length. All lessons followed the tactical games model. The tactical games lesson plans for the basketball, soccer, and volleyball units for this study were selected from the textbook Teaching Sport Concepts and Skills: A Tactical Approach (Mitchell et al., 2006). The flag football unit and the ultimate Frisbee mini unit (practice unit) lesson plans were designed by the primary investigator and checked by the primary author of the Teaching Sport Concepts and Skills: A Tactical Approach textbook. Prior to the start of data collection the PE teachers went through two sessions of tactical games training along with several discussions in regard to the procedures of the study. The PE teachers taught one practice unit of ultimate Frisbee to practice the tactical games model.
ActiGraph GT1M (Pensacola, FL) accelerometers were worn by students and were used to track PA levels throughout each lesson. Prior to the start of data collection students were assigned an accelerometer number and practiced picking up, attaching, wearing, and returning the accelerometer.

Results were generated using Statistical Package for Social Science (SPSS) version 16.0 (SPSS, Chicago, IL, USA). Data from the accelerometers were downloaded according to manufacturer instructions using ActiLife Lifestyle Monitoring Software (Version 1.0.54, Actigraph, LLC., Pensacola, FL) and exported into an Excel file at the end of each week. Data were cut and pasted into the specific lessons for each student from the first Excel file into the participants individually assigned Excel file. Once this was completed formulas were entered into an Excel program to calculate the percentage of time spent in each activity category (light and MVPA), and then the average for all eight lessons of each sport unit were calculated. Once that was completed all the information of each student was put into one Excel file and imported into the SPSS statistics program. Four three-way between-subjects analyses of variance were conducted to evaluate the effect of gender, class setting (coed or same-sex), and grade on PE students’ PA levels for each sport unit.

For the basketball unit results indicated that female students’ spent more time in light and MVPA in the same-sex setting than in the coed setting. Males spent a similar percentage of time in both settings in light and MVPA. Also, the results indicated seventh-grade students’ spent more time in MVPA than ninth-grade students’

For the volleyball unit results indicated that female students’ spent a higher percentage of time in light PA in the same-sex setting than the coed setting. Males spent a similar
percentage of time in both settings in light and MVPA. Seventh-graders spent a higher percentage of time in light and MVPA in the same-sex setting than the coed setting. Eighth-graders spent a higher percentage of time in light PA in the same-sex setting than the coed setting.

For the flag football unit results indicated seventh-grade students in a coed setting had a lower percentage of time in light PA than seventh-grade students in a same-sex setting. The eighth-and ninth-grade students had similar amounts of time in both settings in light and MVPA. Results also indicated that seventh-and eighth-graders spent more time in light activity than ninth-grade students. Setting made no difference among males and females in any of the three grades for MVPA.

For the soccer unit results indicated that seventh-and eighth-grade students in both settings were similar in light, and MVPA. The ninth-grade students in a same-sex setting spent more time in light and MVPA than those ninth-grade students in a coed setting. The seventh-grade students spent more time in light PA during the soccer unit than the ninth-grade students. Male students had a higher percentage of time in MVPA than the female students.

Findings

Basketball

During the basketball unit female students’ spent more time in light and MVPA in the same-sex setting than in the coed setting. In this study male students had similar amounts of light, and MVPA in the same-sex and coed settings during the basketball unit.

In this study during the basketball unit seventh-grade students spent more time in MVPA than ninth-grade students.
Volleyball

During the volleyball unit female students’ spent more percentage of time in light PA in the same-sex setting than the coed setting. There was no difference between the coed and same-sex setting for MVPA. In this study male students had similar amounts of light, and MVPA in the same-sex and coed settings during the volleyball unit. Seventh graders spent more percentage of time in light and MVPA in the same-sex setting than the coed setting. Eighth graders spent more percentage of time in light PA in the same-sex setting than the coed setting.

Flag Football

During the flag football unit seventh-grade students in a coed setting had less percentage of time in light PA than seventh-grade students in a same-sex setting. There was no difference in time spent in MVPA for seventh-grade students’ in either setting. The eighth-and ninth-grade students’ had similar amounts of time in light and MVPA in both settings.

The seventh-and eighth-grade students during the flag football unit spent more time in light activity than ninth-grade students. During flag football there was no difference between grade level and time spent in MVPA.

During the flag football unit seventh-grade female students spent a greater percentage of time in light activity in the coed setting than in the same-sex setting. The eighth-and ninth-grade female students spent more time in light activity in the same-sex setting than the coed setting. Male students in all grades levels spent similar amounts of light PA in both settings during the flag football unit. Setting made no difference among males and females in any of the three grades for MVPA.
Soccer

During the soccer unit there was no difference in setting between light, and MVPA for the seventh-and eighth-grade students. The ninth-grade students in a same-sex setting spent more time in light and MVPA than those ninth-grade students in a coed setting.

The seventh-grade students spent more time in light PA during the soccer unit than the ninth-grade students. Grade level made no difference in time spent in MVPA during the soccer unit.

Male students during the soccer unit spent more time in MVPA than the female students. There was no difference between genders for light PA.

Conclusions

The issue of whether a coed or same-sex setting is most effective for student outcomes in PE continues to be debated at the school district, state, and national levels. However, more studies need to be conducted to add to the limited body of research before any evidence-based decision is made. Many studies have examined student perceptions of coed and same-sex settings, and teacher/student interactions and feedback in both settings. The current study has added to the limited amount of research that has examined student PA levels in coed and same-sex settings. This study was unique in the fact it is the only study that has measured PA levels (via accelerometers) of students for the entire class period for four sport units in a coed and same-sex setting. The accelerometer data were valuable to this study because they provided information in regard to light and MVPA. Other studies have only examined game play or have used other methods such as pedometers or direct observation to measure student PA levels (Hannon & Ratliffe, 2005; McKenzie et al., 2004). The study was also unique from the
perspective that the lessons that the students participated in were based on the tactical games model. No other studies have controlled for the type of instruction. Further research is needed examining PA of students in coed and same-sex settings using other instructional models.

As the results of this study suggest, male PE students had similar light and MVPA levels regardless of setting for basketball, volleyball, flag football, and soccer units. Males spent more time in MVPA for the basketball, volleyball, flag football, and soccer unit than females.

Overall setting does affect PA levels of males and females depending upon the sport. In regard to gender, males were more active than females in all activities. Also activity levels were affected by setting and grade in all activities. More specifically, female PA was affected by grade level, setting, and sport. During the basketball unit females had more MVPA in a same-sex setting. In the volleyball unit there was no difference in MVPA in coed and same-sex settings. However, females in a same-sex setting had higher levels of light PA than females in a coed setting. There was a difference in light and MVPA in coed and same-sex settings based on grade level. For flag football there was no difference in setting for time spent in MVPA. However, seventh-grade females had more time in light activity in a coed setting and eighth- and ninth-grade females had more time in light activity in a same-sex setting. Females had no difference in activity levels in either setting during the soccer unit. However, there was a difference in light, and MVPA in coed and same-sex settings based on grade level. The tactical games approach showed promise as most sport activities showed the total physical activity levels (light and MVPA) near or above 50% of the total class time.
**Recommendations**

Based upon the results of this study the following recommendations for future research are made:

1. Replicate this study at the elementary and/or high school levels. Because the participants’ physical activity levels would be less confounded by developmental factors.

2. Examine other team sports such as ultimate Frisbee, lacrosse, team handball, rugby, and floor hockey. Further research is needed using these activities because they are typical activities that are found in a physical education curriculum.

3. Examine a variety of individual sports in coed and same-sex settings using the tactical games model and other instructional models.

4. Compare other instructional models to examine PA levels of male and female PE students given that there are many instructional models a PE teacher may use.

5. Use longitudinal studies to see if there are differences in PA levels in coed and same-sex settings based on age and grade level.

6. Control for teacher effects among all classes examined. Researchers should document teacher interactions and feedback between each class and setting.

7. Conduct a mixed method study and interview PE students in regards to their participation in coed and same-sex settings and the effect it has on their actual PA levels.

Based upon the results of this study the following recommendations for practitioners are offered:
1. Physical education teachers should be allowed to determine whether their classes should be coed or same-sex based on the sport or activity and grade level.

2. Physical Education teachers should not presume that one setting is better than another setting for student PA and learning since there is limited research regarding coed and same-sex PE.
August 21, 2008

To Whom It May Concern,

Skip M. Williams will be conducting a research project at North Layton Junior High School in the Davis School District during the 2008-2009 school year. He will be working with Debra Kellersberger and Jerry Williamson at North Layton Junior High School. I have met with Skip and his supervisor, Dr. James Hannon, to review the project. This review is the only research review required by our district. The research that Skip will be doing meets with my approval and I am excited that our district will be part of this research. If you have any questions, please contact me at 402-5113.

Sincerely yours,

Steve Lindsay
Healthy Lifestyles Supervisor
APPENDIX B

INFORMED CONSENT
Parental Permission Document

BACKGROUND
Your child is being asked to take part in a research study. Before you decide, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether you will allow your child to take part in this study.

The purpose of this study is to compare physical activity levels, student motivation, game knowledge, game performance, caring climate, and fitness levels of Junior High school physical education students participating in coeducational and same-sex physical education classes that follow the tactical games instructional model. Through this study it is anticipated to gain a better understanding of how the tactical games instructional model and instructional settings (coed and same-sex) influence student learning in physical education.

The primary researcher is a PhD candidate at the University of Utah in the Exercise and Sport Science department.

STUDY PROCEDURE
Your child’s participation will be monitored across 4 units of instruction in physical education. Each unit will last for approximately 3 weeks. Your child will be asked to wear an accelerometer attached around their waist with an elastic belt for each lesson. An accelerometer is a small device similar to a pedometer which measures movement and is not harmful to your child. During each unit you child will be participating in either a coed (boys and girls mixed) or same-sex (boys-only or girls-only) setting. At the end of each lesson your child will complete a situational interest survey that will ask questions regarding that lessons activities and class setting. For each unit your child will take a pre- & post-test of game knowledge which is typically done in the regular PE class.

RISKS
There are no risks in this study. All measures that will be collected are typical types of assessments conducted in a regular physical education class.

BENEFITS
There are no direct benefits for taking part in this study. However, we hope the information we get from this study may help develop a greater understanding of the tactical games instructional model and instructional settings to enhance physical education programs in the future.

ALTERNATIVE PROCEDURES
If you do not want your child to take part in the study, their participation will still be required as part of their physical education requirement, however, their data will not be collected or analyzed for statistical analyses.

CONFIDENTIALITY
Your child’s data will be kept confidential. Data and records will be stored in a locked filing cabinet or on a password protected computer located in the primary researcher’s work space. Only the researcher and members of my study team will have access to this information. Your child’s name will not be required for the surveys or data collection. Student Identification Numbers will be used for participants in order to keep track of data but also to maintain confidentiality of survey answers. A complete list of participant names will be kept by the researcher based on returned assent and parental permission forms. This will only be done in
case the researcher needs to contact a participant for any reason. Contact will only be made at the school in which your child attends. Once all research is complete, and the researcher has determined that no participants need to be contacted, the researcher will destroy the list of participants.

PERSON TO CONTACT
If you have questions, complaints or concerns about this study, you can contact Skip Williams at 801-581-7558 (this is main office number to the Exercise and Sport Science Department at the University of Utah. The secretary will be able to forward your message to Skip Williams). Or you may contact the researcher’s advisor, Dr. James Hannon of the University of Utah directly at 801-581-7646. If you feel your child has been harmed as a result of participation, please have your child inform his/her physical education teacher immediately and they will in turn contact the researcher.

INSTITUTIONAL REVIEW BOARD
Contact the Institutional Review Board (IRB) if you have questions regarding your child’s rights as a research participant. Also, contact the IRB if you have questions, complaints or concerns which you do not feel you can discuss with the investigator. The University of Utah IRB may be reached by phone at (801) 581-3655 or by e-mail at irb@hsc.utah.edu.

VOLUNTARY PARTICIPATION
It is up to you to decide whether to allow your child to take part in this study. Refusal to allow your child to participate or the decision to withdraw your child from this research will involve no penalty or loss of benefits to which your child is otherwise entitled. This will not affect your or your child’s relationship with the investigator or your child’s grade in physical education class.

COSTS AND COMPENSATION TO PARTICIPANTS
There are no costs and/or compensation, for participating in this study.

CONSENT
By signing this consent form, I confirm I have read the information in this parental permission form and have had the opportunity to ask questions. I will be given a signed copy of this parental permission form. I voluntarily agree to allow my child to take part in this study.

________________________
Child’s Name

________________________
Parent/Guardian’s Name

________________________
Parent/Guardian’s Signature

________________________
Relationship to Child

________________________
Name of Researcher or Staff

________________________
Signature of Researcher or Staff

________________________
Date
APPENDIX C

DEMOGRAPHIC SURVEYS
PE STUDENT DEMOGRAPHICS SURVEY

Accelerometer Number:__________

How old are you?

12  13  14  15  16

What grade are you in?

7th  8th  9th

Circle the best answer that describes you:

MALE  FEMALE

Circle the best answer that describes you:

CAUCASIAN (WHITE)  AFRICAN-AMERICAN

ASIAN-AMERICAN  HISPANIC/ LATINO

PACIFIC ISLANDER  NATIVE AMERICAN

BI-RACIAL  OTHER:______________

Do you participate on a school sports team?

Yes

No
PE TEACHER DEMOGRAPHICS SURVEY

Circle the best answer that describes you:

MALE

FEMALE

Circle the best answer that describes you:

CAUCASIAN (WHITE)

AFRICAN-AMERICAN

ASIAN-AMERICAN

HISPANIC/ LATINO

PACIFIC ISLANDER

NATIVE AMERICAN

BI-RACIAL

OTHER: ________________

How many years have you taught physical education? __________

What is the highest degree you have earned?

ASSOCIATE DEGREE

BACHELORS

MASTERS

DOCTORATE

Do you have a degree in physical education?

YES      NO

Do you hold a teaching license?

YES      NO
APPENDIX D

TACTICAL GAMES LESSON PLANS
Basketball Unit
Lesson: #1

Unit: Basketball       Tactical Level: I
Equipment: Basketballs (1 ball per 3 students)
Setting: Inside (Gym)

Tactical Problem: Attacking the basket
Lesson Focus: Shooting within the zone, which is 3 to 8 feet (1-2.4 meters) from the basket
Objective: Receive pass, square the body to basket, and shoot accurately

GAME 1

Setup
3v3, half-court, 5-minute scoring game

Goal
Score as often as possible

Conditions
- Complete three consecutive passes before shooting.
- Score 1 point for each shot attempted, 2 points for each basket made
- All restarts begin at half-court
- No dribbling

Questions
Q: What was the goal of your game?
A: Score as many points as possible.

Q: From where on the court did you score most of your points?
A: Close to the basket.

Q: Why is it better to shoot near the basket rather than far from the basket?
A: More likely to score – higher percentage shot.

Q: What else can you do to increase your chances of scoring?
A: Use good shooting form. Use the backboard as a target.

PRACTICE TASK

Setup
All players shoot three shots from each of the five spots marked around the basket (3-8 feet (1-2.4 meters away). Partner rebounds ball and passes accurately to teammate. Shooter provides target hands, squares up, and shoots.
Goal
Score on 2 of 3 shots at each spot

Cues
Shooting – square up, remember BEEF:
- Base firm
- Elbow under ball
- Extend arm
- Follow through toward target (square above rim on backboard)

GAME 2

Setup
3v3, half court, 5-minute scoring game

Goal
Score as many field goals as possible

Lesson: #2
Unit: Basketball  Tactical Level: I
Equipment: Basketballs (1 ball per 3 students), poly spots or tape
Setting: Inside (Gym)

Tactical Problem: Maintaining possession of the ball
Lesson Focus: Create passing lanes by using on-the-ball skill execution and off-the-ball movement
Objectives:
- Present target hand to show passer where to pass
- Receive ball in triple-threat position
- Perform a ball fake before passing
- Make a lead pass just ahead of the target hand

GAME 1

Setup
3v3, half-court, possession game

Goal
Complete three passes before shooting

Conditions
- Score 1 point for each successful pass and 2 points for a basket
- No dribbling
- All restarts occur at half-court
Questions
Q: What was the goal of your game?
A: Complete three passes before shooting.

Q: When you were passing, what did you do to keep the defense from stealing the ball?
A: Used arms and body to protect the ball; used ball fakes and jukes to throw off the opponent.

Q: Did you use any signals to let your teammates know you wanted to receive the pass?
A: Held hand up or out to let passer know where to pass the ball.

PRACTICE TASK

Setup
Use 3v3 practice passing and moving from point to wing, baseline, and high and low posts (no passes between post positions). Mark positions with tape, poly spots, and so forth (see figure 5.1). Player passes and then moves to another position. The player receiving the ball must (1) present a target for the passer, (2) receive the ball in a triple-threat position and jump stop, (3) give a ball fake or juke (fake and jukes are also known as feints – body movements to fool opponents) before passing, and (4) perform a quick, accurate lead pass to his or her partner. Use cooperative to active defense and switch from offense to defense after 10 passes or 2 minutes. Continue as time allows.

Goals
- Present target hand to passer
- Receive ball in triple-threat positions
- Perform a ball fake or juke before passing
- Make a lead pass ahead of the target hand

Cues
- Target hand (receiver)
- Triple threat (passer) – ball at the hip, knees bent, elbows out
- Fake a pass, make a pass (passer)

GAME 2

Setup
3v3, half court, possession game

Goal
Complete three passes before shooting

Conditions
- Score 1 point for each successful pass and 2 points for a basket
- No dribbling
- All restarts occur at half-court
- Maintain possession by providing a target for the passer, receiving the ball in a triple threat, and using a ball fake

**Lesson: #3**

**Unit:** Basketball  
**Tactical Level:** I  
**Equipment:** Basketballs (1 ball per 3 students)  
**Setting:** Inside (Gym)

**Tactical Problem:** Maintaining possession of the ball  
**Lesson Focus:** Decision making before passing  
**Objective:**
- Determine the appropriate situations for using overhead, bounce (using one or two hands), and chest passes during game play  
- Perform passes accurately and appropriately during game play

**GAME 1**

**Setup**  
3v3, half court, possession game

**Goal**  
Complete three consecutive passes on three consecutive possessions

**Conditions**
- Complete at least three passes before shooting  
- Score 1 point for three consecutive passes, 2 points for a basket, and 10 points for three consecutive passes on three consecutive possessions (Ask students to be aware of the types of passes they use during game play)

**Questions**

Q: What was the goal of the game?  
A: Complete three consecutive passes on three consecutive possessions.

Q: What types of passes did you use during your game?  
A: Overhead, bounce, and chest passes.

Q: Why did you use all these types of passes?  
A: To throw the ball long, to get around a defender, or to throw a hard or quick pass.

**PRACTICE TASK**

**Setup**  
Players start at one of the five offensive positions (see figure 5.1) in a 3v3 game like practice task with cooperative to active defense (same as previous lesson). Ball starts at the top of the key, with the point guard slapping the ball to signal teammates to cut away from their defenders and then to cut back (first to get open for a pass, or move toward the
The pass must be a skip pass, that is, a long pass that goes over or past one teammate and on to another. The player receiving the pass does the same thing until 10 consecutive overhead passes have been completed. Repeat this task for the bounce pass, using active defense to pass to teammates as they cut away from their defenders.

**Goal**

10 consecutive passes during each passing rotation

**GAME 2**

**Setup**

3v3, half court, possession game

**Goal**

Complete three consecutive passes on three consecutive possessions.

**Conditions**

- Complete at least three passes before shooting
- Score 1 point for three consecutive passes, 2 point for a basket, and 10 points for three consecutive passes on three consecutive possessions

**Extension**

Defense scores 2 points for each steal and 1 point if they tip or touch the ball

**Lesson:** #4

**Unit:** Basketball  
**Tactical Level:** II  
**Equipment:** Basketballs (1 ball per 3 students)  
**Setting:** Inside (Gym)

**Tactical Problem:** Creating space to attack  
**Lesson Focus:** Creating passing lanes in the zone  
**Objective:** Use cuts (L-cut or V-cut) to elude a defender and get open for a shot

**GAME 1**

**Setup**

3v3, half-court game

**Goal**

Get open to receive a pass in the zone

**Conditions**

- Shoot only from the zone (3-8 feet, or 1-2.4 meters, around the basket)
- Score 1 point for attempting a shot and 2 points for making a basket
Questions
Q: What was the goal of the game?
A: To get open to receive a pass in the zone.

Q: How do you do that?
A: Move fast, use a fake or juke, run one way and then change directions really fast.

Q: What do you need to consider before making a cut?
A: The position of the ball and of the defenders.

PRACTICE TASK

Setup
Use 2v1 with one active defender and two offensive players. Ball begins at the point position and passer waits until defender is guarding her before passing. Then when she sees her teammate fake or juke, she ball fakes and times the pass to the open receiver. The receiver cuts toward his defender and then away with target hands up to communicate where the passer should pass the ball. The defender stays between the passer and receiver, using active defense about an arm’s length away. After the receiver catches a pass three times, all players rotate positions. Groups of three can rotate on and off the court and serve as coaches when on the sidelines.

Goals
- Off-the-ball player uses quick cuts to elude the defender and get open in the zone.
- Off-the-ball player shows target hands.
- On-the-ball player uses a ball fake and anticipates when and where to pass.

GAME 2

Setup
3v3, half-court game

Goal
Off-the-ball players get open in the zone

Conditions
- Shoot only from the zone
- Score 1 point for attempting a shot and 2 points for scoring a basket

Lesson: #5
Unit: Basketball     Tactical Level: II
Equipment: Basketballs (1 ball per 3 students)
Setting: Inside

Tactical Problem: Attacking the basket
Lesson Focus: Using the give-and-go to score
Objective:
- Fake, pass, and cut to the basket
- Time and throw a lead pass back
- Shoot off the pass

GAME 1

Setup
3v3, half court game

Goal
Off-the-ball players get open in the zone

Conditions
- Must complete at least two passes before shooting
- All shots must be made within 3 to 5 feet (1-1.5 meters) of the basket

Questions
Q: Off-the-ball players, how were you able to get open in the zone?
A: Pass and cut or fake or juke away from the basket and then move quickly toward the basket.

Q: What did you do to keep the defender from getting between you and the ball?
A: Used a strong juke or jab step, crossover step, or quick move toward the basket.

Q: What did you need to consider before driving to the basket?
A: The position of the ball and of the other defenders.

PRACTICE TASK

Setup
Use 2v2 with active defenders and one ball. Two players serve as coaches. Each offensive player practices give-and-go three times and then rotates into the coaching role. Move to other side of basket and repeat; practice give-and-go three times first with cooperative and then with active defense.

Goal
Score off a give-and-go.

Cues
- Pass and cut
- Use the target hand
- Keep the defender behind you
**Question**
Q: What did you do to complete the give-and-go when there was competitive defense?
A: Used more fakes, dribbled to create passing lanes, and got open to support the player with the ball.

**Cues**
- Make quick cuts
- Present target hands
- Anticipate when and where to pass

**GAME 2**

**Setup**
Repeat game 1

**Goal**
Score off a give-and-go

**Condition**
Earn 1 extra point if give-and-go is used to score

**Lesson: #6**

**Unit:** Basketball  
**Tactical Level:** II
**Equipment:** Basketballs (1 ball per 3 students)
**Setting:** Inside (Gym)

**Tactical Problem:** Winning the ball  
**Lesson Focus:** Defensive positioning when off the ball

**Objective:**
- Demonstrate proper defensive positioning, placing the body between the defender and the basket and keeping the ball-side hand between the defender and the ball  
- Watch the ball  
- Maintain active feet and hands

**GAME 1**

**Setup**
3v3, half court game

**Goal**
Keep opponent from scoring

**Conditions**
- Use competitive defense to guard opposing player  
- No dribbling  
- Complete at least three passes before shooting
• Defensive team scores 1 point if offensive team does not complete three passes
• No violations or fouls

Questions
Q: What did you do to keep the opposing team from scoring?
A: Closely guarded and rebounded so they wouldn’t get a second shot.

Q: What defensive positions or actions interfered with the offense the most and kept your opponent from scoring?
A: Keeping your body between the opponent and the goal, positioning your ball-side hand between the ball and the opponent, maintaining a ready position (medium body posture, weight forward, ready to move), keeping hand and feet active.

PRACTICE TASK

Setup
With a partner, player practice off-the-ball defensive positioning (partners can also coach each other). Players can dribble, but as soon as they pick up the dribble, the defensive player moves closer and has active hands and feet.

Goals
Either steal the ball without fouling or cause a turnover

Cues
• Keep your body between the opponent and the goal
• Stay in the ready position
• Maintain active hands and feet
• Watch the ball

GAME 2
Repeat game 1

Lesson: #7

Unit: Basketball      Tactical Level: III
Equipment: Basketballs (1 ball per 3 students)
Setting: Inside (Gym)

Tactical Problem: Restarting play
Lesson Focus: Inbound (sideline) pass
Objective: Pick away from the ball to create space for an inbound pass when restarting play.

GAME 1

Setup
3v3, half-court game
Goal
Score within three passes

Conditions
- Restart play from sidelines on all violations and fouls
- Inbound pass counts as one pass
- If no shot is attempted within three passes, the offensive team has made a turnover and the ball must be taken out at the sideline
- Player inbounding the ball must remain stationary until ball is passed
- Active defense
- No dribbling

Questions
Q: What did your team do to score within three passes?
A: Got open and created space near the ball.

Q: What did your team do to get open and create space, particularly during inbound plays?
A: Faked and cut to the ball and picked teammates’ defenders so teammates could get away and come to the ball.

Q: If the ball is on the sideline at about midcourt, how should your team set picks to create space for the inbound pass?
A: Spread out, pick away to create space toward the ball, and cut toward the ball.

PRACTICE TASK

Setup
Teams create an inbound play that provides two different options (using two different players) for allowing a shot within three passes.

GAME 2
Repeat game 1

Note
Allow teams to show their inbound plays during closure

Lesson: #8

Unit: Basketball  
Tactical Level: III

Equipment: Basketballs (1 ball per 3 students)
Setting: Inside (Gym)

Tactical Problem: Winning the ball and using space in the attack
Lesson Focus: Transitioning from defense to offense
Objective:
• Rebound and outlet
• Set up offense as quickly as possible

GAME 1

Setup
4v4, half court

Goals
• Defense uses outlet pass after rebounding ball
• Offense scores as many points as possible

Conditions
• Remember to box out and use outlet pass on a defensive rebound
• Players call their own fouls; 30-second offensive clock
• Defensive team gets 1 point for successful rebound and outlet pass

Questions
A: Why should you make an outlet pass after rebounding the ball?
A: To get the ball out of the key and away from opponents and to get the ball down the floor faster.

Q: Which player should get the outlet pass?
A: A player who is not involved in the rebound and is on the same side of key where the ball rebounds.

Q: Where and how should the outlet player go to receive the outlet pass?
A: To the sideline nearest the player rebounding the ball; move quickly to create a passing lane.

PRACTICE TASK

Setup
Use 4v4, with one shooter and one outlet, O4 shoots ball (see figure 5.4). On the release, X1, X2, and X3 turn and box out offensive players. X4 moves right or left, depending on where the rebound occurs. The player rebounding the ball turns and passes to the outlet, X4. Repeat three times and then rotate.

Goal
Successfully complete three consecutive outlet passes

Cues
• Rebound
• Protect the ball
• Pivot away from the basket
**PRACTICE TASK 2**

**Setup**
Extend practice task 1. After outlet pass, point guard or off guard moves toward center court to create a passing lane. The next available player fills the outside lane, opposite the rebound. Trailing players move down the court as quickly as possible and assume offensive positions.

**Goal**
After rebounding the ball, use no more than five passes to score

**Cues**
- Get and go
- Quickly move down the court
- Stay wide and spread out to maintain passing lanes

**GAME 2**
Repeat game 1
Soccer Unit

Lesson: #1

Unit: Soccer       Tactical Level: I
Equipment: Soccer balls (1 ball per 2 students), 30 Cones, Jerseys
Setting: Outside

Tactical Problem: Maintaining possession of the ball
Lesson Focus: Dribbling to control the ball
Objective: Move the ball into space to avoid opponents and move the ball forward using controlled actions

GAME 1

Setup
1v1 played in an area 20 by 10 yards/meters marked with cones at each end. The dimensions can vary for this beginning game. It is possible to play without lines – just spread out the cones marking each game to allow for movement between them (from end to end) and don’t be too concerned if one game overflows into another (overflow will only be temporary and the players will still be working on their dribbling).

Goal
Stop the ball on the opponent’s line (between the cones) to score

Conditions
- After a goal is scored, the ball is returned to the player who conceded the goal
- The player who scored must retire to halfway down the playing area

Questions
Q: What is the goal of this game?
A: Get to the opponent’s line and stop the ball.

Q: So how do you get the ball to the line?
A: Dibble.

Q: What problem does the opponent give you?
A: She’s in the way. You have to keep the ball away from her while you dribble.

Q: How many parts of the foot can you use as you dribble?
A: Six—the inside, outside, instep (i.e. the laces), sole, heel, and toe. (Teachers often fail to consider all of these surfaces as useful for ball manipulation, instead focusing on the inside of the foot. While the inside of the foot is important, the outside is equally important for dribbling and other surfaces are crucial for changing direction.)
**PRACTICE TASK**

**Setup**
Free dribbling within a specified area (of sufficient size matched to the number of students). Give one ball to each student or have students share a ball if necessary. Call “turn” or “speed up” or “slow down” (or anything else that forces change in direction or speed).

**Goals**
- Closely control the ball while dribbling
- Quickly change speed and direction

**Cues**
- Keep the ball close
- Use all parts of both feet
- Turn and move away at high speed

**Extensions**
- Teacher becomes the defender (along with some other students)-beat the defenders.
- 1v1 possession game in 10 by 10 yards/meters. Player 1 tries to keep the ball away from the player 2 for 5 seconds.

**GAME 2**
Repeat game 1

Lesson: #2

**Unit:** Soccer  
**Tactical Level:** 1  
**Equipment:** Soccer balls (1 ball per 6 students), 30 Cones, Jerseys  
**Setting:** Outside

**Tactical Problem:** Attacking the goal  
**Lesson Focus:** Shooting  
**Objective:** Learn the three principles of good shooting:  
- Shoot on sight  
- Hit the target  
- Keep the shot low

**GAME 1**

**Setup**
6v6 on small field of 30 by 30 yards/meters with large goal (8 yards/meters) (see figure 4.5)

**Goals**
- Shoot when possible
• Hit the target (the whole goal)

Questions
Q: What should you do when you’re this close to the goal?
A: Shoot.

Q: Why should you shoot?
A: Because if you don’t shoot you won’t score!

Q: Where should you aim when you shoot?
A: At the whole goal so you can force the goalkeeper to make a save.

Q: Should you aim high or low?
A: Low

Q: Why should you shoot low?
A: It’s harder for the goalkeeper to go down to make a save.

PRACTICE TASK

Setup
Partner practice (see figure 4.6) with static or moving ball (with goalkeepers if groups of three are needed)

Goals
• Shoot ball between two posts or cones
• Keep all shots below waist height

Cues
• Take a long step to the ball
• Keep the non-kicking foot next to the ball
• Use the instep (or laces)
• Keep head and toe down

GAME 2

Setup
Repeat game 1

Goals
• Specific number of shots, depending on ability
• Specific number of on-target shots
Lesson: #3

Unit: Soccer  Tactical Level: II
Equipment: Soccer balls (1 ball per 6 students), 30 Cones, Jerseys
Setting: Outside

Tactical Problem: Attacking the goal
Lesson Focus: Use target player to create shooting opportunities
Objective: Target player to lay (pass) the ball off for a shot by supporting player (see practice task)

GAME 1

Setup
6v6 in 60 by 40 yards/meters, full-size goals (see figure 4.7)

Goal
Get an early pass to target player, then move to support the target player

Conditions
- One target player per team (OT, XT)
- One defender marking target player

Questions
Q: What should other players do when their own target player has the ball?
A: Provide support.

Q: Where is a good place to support?
A: In a position to receive a pass and shoot.

PRACTICE TASK

Setup
Shooting from target player lay off (pass) (see figure 4.8); one goalkeeper, one calculator, one target player, three or four shooters

Goals
- Accurate pass to target
- Firm lay off by target player (to the side)
- Clean strike of moving ball by shooter
- Specific number of shots on-target

Cues
- Shooter
  - Firmly pass to the target
  - Run to the side of the target to receive the return pass
  - Shoot the moving ball immediately
• Target  
  - Firmly pass to the side

**GAME 2**

**Setup**  
6v6 in 50 by 40 yards/meters, full goal (see figure 4.9)

**Goals**  
• Shield or lay off by target player  
• Support for target player  
• Specific number of shots on goal per team

**Conditions**  
• Play with one target player (rotate)  
• Target player cannot turn with ball  
• Goals scored from a lay off by the target player count double

**Lesson:** #4  
**Unit:** Soccer  
**Tactical Level:** I  
**Equipment:** Soccer balls (1 ball per 6 students), 30 Cones, Jerseys  
**Setting:** Outside  

**Tactical Problem:** Restarting play  
**Lesson Focus:** Throw-in  
**Objective:** Quick use of correctly taken throw-in to move attack forward

**GAME 1**

**Setup**  
6v6 in 60 by 30 yards/meters, full goal (see figure 4.10), narrow field so ball goes out of play often and players take many throw-ins

**Goal**  
Take quick throw-ins

**Questions**  
Q: How can you quickly get the ball into play on a throw-in?  
A: Player O1 throws to nearest player (O2), who passes it back to O1.

**PRACTICE TASK 1**

**Setup**  
Partner practice, throw, control, return
Cues

- **Thrower**
  - Use two hands
  - Take the ball behind the head
  - Keep two feet on the ground at all times
  - Throw to the receiver’s feet and move onto the field

- **Receiver**
  - Control and return the ball to the thrower

**GAME 2**
Repeat game 1

**Lesson: #5**

**Unit:** Soccer  **Tactical Level:** II

**Equipment:** Soccer balls (1 ball per 3 students), 30 Cones, Jerseys

**Setting:** Outside

**Tactical Problem:** Maintaining possession of the ball

**Lesson Focus:** Supporting the ball carrier

**Objective:** Students being positioned to receive a pass

**GAME 1**

**Setup**
3v3 in 30 by 20 yards/meters, narrow goal (see figure 4.14)

**Goals**

- Accurately pass with insides and outsides of feet
- Players move into position to receive a pass
- Player with the ball looks for support

**Conditions**

- Three touches (each player has two touches to receive the ball and one to pass or shoot)
- Head-height rule

**Questions**

Q: How can players without the ball help a player who has the ball?
A: Be in a position to receive a pass.

Q: Where should supporting players go?
A: Away from defenders into open space.

Q: Any open space?
A: Anywhere you can receive a pass – into a passing lane (this could be behind a teammate with the ball if necessary).
PRACTICE TASK

Setup
2v1 in 20 by 10 yards/meters, pass and support (see figure 4.15), two attackers (X and S). On the signal the defender (O) attacks the ball, the supporter (S) moves to one side, and the attacker (X) draws the defender and passes. Play for six passes or until O wins the ball.

Goals
- Supporting player moves to a good position
- Attacker (X) waits for defender (O) to close in before passing
- Three repetitions and rotate

Cues
- Defender attacks the ball on the signal
- Supporter moves quickly to the side
- Attacker passes as defender advances

GAME 2
Repeat game 1

Lesson: #6
Unit: Soccer  Tactical Level: II
Equipment: Soccer balls (1 ball per 2 students), 30 Cones, Jerseys
Setting: Outside

Tactical Problem: Defending space
Lesson Focus: Marking (guarding) and pressuring the ball
Objective: Understanding the need to mark players and to pressure the ball to defend space

GAME 1

Setup
4v4 in 40 by 30 yards/meters, full goal

Goals
Defenders are in position between opponent and own goal
Defenders are in position so they can see opponent and ball

Condition
Mark (or guard) an opposing player
Questions
Q: How can you make it hard for opponents to receive the ball?
A: Mark (or guard) them.

Q: Where should you stand to mark them?
A: Between your opponent and your goal.

Q: As the ball nears your opponent, what should you do?
A: Get closer to your opponent.

Q: As your opponent nears your goals, what should you do?
A: Again, get closer to your opponent.

PRACTICE TASK

Setup
1v1 plus two feeders in 20 by 10 yards/meters (see figure 4.23)

Goals
- Prevent opponent from turning
- Keep appropriate distance
- Use appropriate stance

Conditions
- Feeders at 0 and 20 yards/meters
- Alternate feeds

Cues
- Close down opponent quickly
- Stop one arm’s length away
- Get low
- Use staggered stance
- Wait for opponent to try to turn
- Don’t dive into the tackle

GAME 2
Setup
Repeat game 1

Goals
- Close space between you and opponent as ball is played
- Prevent opponent from turning

Lesson: #7
Unit: Soccer  Tactical Level: III
Equipment: Soccer balls (1 ball per 2 students), 30 Cones, Jerseys
Setting: Outside

Tactical Problem: Creating space in attack
Lesson Focus: One-touch (or first-time) passing
Objective: Using a first-time pass to create space (a first-time pass is one given immediately without using any touches to control the ball)

GAME 1

Setup
2v2 plus two players per team at outside corners in 20 by 20 yards/meters for total of 4v4 (see figure 4.30)

Goals
- Possession
- Ten passes

Conditions
- Four players in grid can only use fist-time pass. Outside players can move 10 yards/meters along each line
- Inside players cannot tackle outside players

Question
Q: What does the first-time pass enable you to do?
A: Move the ball quickly.

PRACTICE TASK

Setup
3v1 pressure pass using two balls (see figure 4.31 with first-time passes (alternate balls)

Goal
Accurate redirection of ball by a first-time pass to the player without a ball

Cues
- Decide early where the ball has to go
- Redirect the ball with the inside or outside of the foot

GAME 2

Setup
4v4 in 40 by 30 yards/meters, small goals, no goalkeeper

Condition
Two players per team must play one touch (designate one of these players as target player), then rotate
Goals
- Speed of ball movement
- Speed of support

Lesson: #8

Unit: Soccer   Tactical Level: III
Equipment: Soccer balls (1 ball per 2 students), 30 Cones, Jerseys
Setting: Outside

Tactical Problem: Winning the ball
Lesson Focus: Containment and tackle

Objective:
- Stay on feet
- Make a solid tackle

GAME 1

Setup
3v3 in 30 by 20 yards/meters, no goal (see figure 4.34)

Goal
Control ball and get ball to 30-yard/meter line

Condition
Take on your opponent (try to dribble around her) before passing

Question
Q: How can you slow an attacker and win the ball?
A: Channel (i.e., guide the opponent in a particular direction) and tackle.

PRACTICE TASK 1

Setup
1v1 in 20 by 10 yards/meters. Defender (O) passes ball to attacker (X) and advances to close him down. O tries to dribble around O to the 20-yard/meter line (see figure 4.35)

Goal
Channel and tackle

Conditions
- Defender feeds from 20 yards/meters
- Can move to close down attacker when ball crosses 10 yards/meters

Cues
- Close quickly to about 6 feet (2 meters)
- Staggered stance in front and to one side of the opponent
- Channel the attacker to his weak side (i.e., to his left if player is right-footed)
- Stay on your feet and wait for the attacker to move (to go around you)
- Get your foot in for solid tackle (or poke the ball out of play)

**PRACTICE TASK 2**

**Setup**
1v1 block tackle practice (standing). ON count of three both players use inside of the same foot to make a solid tackle on the ball.

**Goal**
Firm tackle

**GAME 2**
Repeat game 1
Volleyball Unit

Lesson: #1

Unit: Volleyball  
Tactical Level: I

Equipment: Volleyball Court (as many as possible), 1 volleyball per 3 students

Setting: Inside (Gym)

Tactical Problem: Setting up to attack

Lesson Focus: Base positions and containing the ball on your court

Objective: Make initial pass high and in the middle of the court (playable ball)

GAME 1

Setup
3v3

Goal
Set up to attack the ball

Conditions
- Make court narrow and short, set up seen in figure 8.2.
- Initiate game from a playable toss (free ball)
- Alternate free ball after each rally
- Have a serving team

Questions
Q: What did you do to contain the ball on your side of the court?
A: Controlled the ball and hit it high.

Q: How did you accomplish this?
A: With an overhead or forearm pass. (Note that the novice might not know the terms but will possibly say, “Like this,” while showing you the actions.)

Q: Which way is best for receiving the serve?
A: Using Forearms

Q: Where is a safe place to pass?
A: Into the middle of the court.

PRACTICE TASK

Setup
Forearm pass, triad
Goals
- Pass a playable ball, one that is high and in the middle of the court, so that another player can hit it
- Focus on the medium body posture and flat platform

Conditions
- Do three trials before rotating
- Tosser prompts by hitting the side of the ball and then gives a playable toss to the passer, who passes the ball to the target (setter)
- Setter catches the ball and then bounces it back to the tosser (see figure 8.3)

Cues
- Medium body posture
- Feet to the ball
- Belly Button to target
- Thumbs together, flat platform (i.e., forearms level)

GAME 2

Setup
3v3

Goals
- Attempt a forearm pass as the first contact on your side of the net
- Earn 1 point for select and attempt (i.e., for trying the forearm pass, even if the result is not playable)

Lesson: #2

Unit: Volleyball   Tactical Level: I
Equipment: Volleyball Court (as many as possible), 1 volleyball per 3 students
Setting: Inside (Gym)

Tactical Problem: Setting up to attack
Lesson Focus: Learning base position and containing the ball on your court using the forearm pass
Objective: Select the forearm pass and execute a playable ball in the middle of your court

GAME 1

Setup
3v3

Goal
Set up to attack the ball
Conditions
- Make court narrow and short
- Initiate game from a playable toss (free ball)
- Alternate free ball after each rally
- Rotate serving team (see figure 8.2)

Questions
Q: What did you do to set up a playable ball on your side of the court?
A: Hit the ball high to the middle of the court using the forearm pass.

Q: How do you perform the forearm pass?
A: Use medium body posture and a flat platform and point your belly button at the target.

Q: Why should you use the forearm pass?
A: The flat platform has a larger, flatter surface that makes it easier to block the ball (i.e., to receive).

PRACTICE TASK

Setup
Forearm pass practice, triad

Goals
- Perform three trials or two playable balls before rotation
- Hit a playable ball, one that is high and in the middle of the court, so another player can hit the ball
- Focus on medium body posture and pointing the belly button to the target

Conditions
- Tosser prompts by hitting the side of the ball and then gives a playable toss to the passer, who passes the ball to the target (setter)
- Setter catches the ball and bounces it back to the tosser (see figure 8.3)

Extension
Move passer to other positions in the back row

Cues
- Medium body posture
- Feet to the ball
- Flat platform
- Belly button to target
GAME 2

Setup
3v3

Goals
- Use a forearm pass as first contact on your side of the net
- Earn 1 point if the first pass is a playable forearm pass

Lesson: #3

Unit: Volleyball    Tactical Level: I
Equipment: Volleyball Court (as many as possible), 1 volleyball per 3 students
Setting: Inside

Tactical Problem: Winning the point
Lesson Focus: Attacking the ball
Objective: Select and execute a down ball (i.e., a standing spike) or spike (with a jump)

Note: Again, in this lesson we shift from setting up to attack to the attack itself, a skill that we might be introducing earlier than you are accustomed to when teaching volleyball. Our reason for this is motivational in that students get a lot out of learning to attack and once they are able to attack they see greater value in quality setting as you work backward from the spike (or down ball).

GAME 1

Setup
3v3

Goals
- Set up to attack
- Earn 1 point when team has two hits on its side

Conditions
- Make court narrow and short
- Initiate game from a playable toss (free ball)
- Alternate free ball after each rally
- Rotate serving team (see figure 8.2)
- Use up to three hits

Note
Easy toss is two-handed soccer throw-in (rainbow toss)

Questions
Q: What are you setting up to do when you get two hits on your side?
A: To attack.
Q: How do you attack in volleyball?
A: With a hit, spike, or down ball.

Q: How does an attack help you win the point?
A: It’s hard to return.

**PRACTICE TASK**

**Setup**
Toss to attack, use triad

**Goals**
- Hitter performs 3 to 5 trials
- Tosser tosses a high ball (1 yard/meter high, near the spiking line) for hitter to attack

**Conditions**
- Organize on two courts (two teams of three players)
- Tosser (setter) tosses a high ball near the spiking line for the hitter to attack (see figure 8.4). The toss should simulate a set rainbow toss
- Hitter selects to hit a down ball or a spike
- Feeder keeps the balls from becoming a danger in the field of play and gives the balls, one at a time, to the tosser
- Collector scoops up the balls after the hit and rolls them to the feeder

**Note**
For safety during hitting practice, have two teams work together on the same side of the court and be sure that all teams hit the same way

**Cues**
- Down ball (i.e., a hit without the jump)
  - Feet to the ball
  - Throw hands high
  - Swing fast
- Hitting (with a jump)
  - Feet to the ball
  - Jump
  - Throw hands high
  - Swing fast

**GAME 2**

**Setup**
3v3
Goals
- Set up to attack to win the point
- Earn 1 point when team attempts to attack the ball

Lesson: #4
Unit: Volleyball  Tactical Level: I
Equipment: Volleyball Court (as many as possible), 1 volleyball per 3 students
Setting: Inside

Tactical Problem: Setting up to attack
Lesson Focus: Setter moving (opening up) into position to set up
Objective: Open up to set

GAME 1

Setup
3v3

Goals
- Select and attempt to set up for an attack using the overhead pass (set)
- Earn 1 point if there are two hits on your side

Conditions
- Make court narrow and short
- Initiate game from a playable toss (free ball)
- Alternate free ball after each rally
- Rotate serving team (see figure 8.2)
- Use up to three hits

Note
Easy toss is two-handed soccer throw-in (rainbow toss)

Questions
Q: What direction does the setter face when the ball is on the other side of the net?
A: She faces the net.

Q: What does the setter need to do once the ball in on her side of the net?
A: Turn to see the ball.

Q: How does the setter do this?
A: Pivot, turn, and call “here.”

PRACTICE TASK

Setup
Practice opening up and setting, use triad
Goals
- Setter opens up
- Setter makes 3 or 4 sets to target hitter
- Setter performs a good set, which is a rainbow ball (1 yard/meter high and 1 yard/meter off the net)

Conditions
- Tosser prompts by hitting (slapping) the side of the ball and then gives a playable toss (simulates a good forearm pass) to the setter, who sets the ball to the hitter
- Setter is in ready position at the net
- When the ball is hit, setter opens up and sets the ball to the hitter, who catches it and bounces it back to the tosser (see figure 8.6)

Cues for Opening Up
- Ready position at the net
- Medium to high posture
- Hands high for block
- Pivot (turn) to the passers
- Call “here.”
- See the passer play the ball
- Adjust to set the ball (happy feet)

Cues for Setting
- Medium posture
- Hands high (at forehead)
- Volleyball-shaped hands
- Square to target
- Finish like Superman (extend arms and legs)

PRACTICE TASK 2

Setup
Extend previous drill (only if students are ready for the challenge)

Goals
- Setter opens up
- Setter makes 3 or 4 good sets to the hitter
- Setter performs a good set, which is a rainbow ball (1 yard/meter)

Conditions
- Target (hitter) prompts by hitting (slapping) the side of the ball and then gives a playable toss free ball) to the passer, who passes to the setter
- Setter is in ready position at the net
• When the ball is hit, the setter opens up and sets the ball to the hitter, who catches it and starts again (see figure 8.7)

GAME 2

Setup
3v3

Goals
• Select and execute skills to set up the pass-set-attack on your side of the net
• Earn 1 point for an attempt at pass-set-attack

Lesson: #5
Unit: Volleyball   Tactical Level: II
Equipment: Volleyball Court (as many as possible), 1 volleyball per 3 students
Setting: Inside

Tactical Problem: Winning the Point
Lesson Focus: Approaching for attack (spike approach)
Objective: Hitter successfully transitions off the net and approaches

GAME 1

Setup
3v3

Goals
• Select and execute an attack (pass-set-hit)
• Earn 1 point by attempting to attack (down ball, hit or spike)

Conditions
• Make court narrow and short
• Initiate game from a playable toss (free ball)
• Alternate free ball after each rally
• Rotate serving team
• Use up to three hits

Notes
• Easy toss is two-handed soccer throw-in (rainbow toss)
• You can change the size of the court to meet students’ needs
• Arrange players in positions of passer, setter, and hitter as shown in figure 8.11

Questions
Q: Where is the front hitter’s base position?
A: Facing the net to see how play develops on the opponent’s side and to block a bad pass.
Q: What should the hitter do when the ball crosses the net?
A: Transition and move off the net.

Q: How does the hitter approach to attack?
A: Run to the ball and approach.

**PRACTICE TASK**

**Setup**
Practice approaching to attack

**Goal**
Hitter performs 3 or 5 trials and then rotates

**Conditions**
- Two teams practice together (teams A and B)
- Setter slaps the ball (to prompt the hitter to move back from the net) and tosses a high, outside set after the hitter has transitioned off the net
- Hitter approaches to attack (hit or spike) the ball (see figure 8.12)

**Extensions**
- Teams continue hitting practice by switching sides in order to experience hitting from both the left and right front positions
- Teams hit from behind the 10-yard/meter line, with setter tossing a high set at the 10-foot line to allow hitters to swing fast and through without hitting the net

**Cues**
- Feet to the ball
- Jump
- Throw hands high
- Swing fast
- Heel of open hand strikes ball
- Wrist snap

**GAME 2**

**Setup**
3v3

**Goals**
- Select and execute an attack (pass-set-hit)
- Earn 1 point when your team sets up and attacks (down ball, hit or spike)
Lesson: #6

Unit: Volleyball    Tactical Level: II
Equipment: Volleyball Court (as many as possible), 1 volleyball per 3 students
Setting: Inside

Tactical Problem: Winning the point
Lesson Focus: Setting to attack

Objective:
- Execute hittable set and successful transition off the approach to attack (hit or spike)
- Set a hittable ball that is high and 0.5 to 1 yard/meter off the net (rainbow set)

GAME 1

Setup
3v3

Goals
- Use forearm pass as first contact
- Hitter transitions off the net
- Earn 1 point by attempting to attack (hit or spike)

Conditions
- Make court narrow and short
- Initiate game from a playable toss (free ball)
- Alternate free ball after each rally
- Rotate serving team
- Use up to three hits

Notes
Easy toss is two-handed soccer throw-in (rainbow toss)

Questions
Q: Where should the setter set the ball?
A: He should set it 0.5 to 1 yard/meter off the net.

Q: How should the hitter get ready to hit?
A: Transition off the net.

Q: When should the hitter approach?
A: When the ball is at its apex (highest point).

PRACTICE TASK

Setup
Practice setting and hitting
Goal
Execute pass and hit successfully for three trials before rotating

Conditions
- Use two teams and three balls
- Tosser slaps ball (prompts) so that the setter and hitter make off-the-ball movements (open up, transitions)
- Setter sets (forearm or overhead pass) and hitter hits a down ball or spikes (see figure 8.13)

GAME 2

Setup
3v3

Goal
Earn 1 point for two hits and 2 points for successful attack

Lesson: #7
Unit: Volleyball  Tactical Level: III
Equipment: Volleyball Court (as many as possible), 1 volleyball per 3 students
Setting: Inside

Tactical Problem: Setting up to attack and winning the point
Lesson Focus: Combining skills and movements
Objective: Perform pass-set-hit combinations

GAME 1

Setup
3v3

Goals
- Serve receive with two players
- Earn 1 point with a pass, set, and attempted hit

Conditions
- Use narrow court
- Initiate game from a no-ace serve
- Alternate serves and rotate on serve (side-out)
- Use up to three hits on a side

Questions
Q: What does a team need to do to win a point when receiving a serve?
A: Make a forearm pass, set, transition, open up, communicate, and support.
Q: What would make a team win more points?
A: Being consistent, communicating, and working as a team.

**PRACTICE TASK**

**Setup**
Practice pass-set-hit

**Goal**
Pass and hit for 3 of 5 trials successfully before rotating

**Conditions**
- Use two teams and three balls
- Tosser slaps the ball (prompts) so the setter and hitter make off-the-ball movement (open up, transition)
- Tosser tosses the ball to the passer, who uses a forearm pass to get the ball to the setter
- Setter sets (forearm or overhead pass) and hitter hits or spikes (see figure 8.19)

**Note**
Tosser can also use a modified overhead serve

**PRACTICE TASK 2**

**Setup**
Practice serving and a receive-set-hit combination

**Goal**
Pass and hit successfully for 3 of 5 trials before rotating

**Conditions**
- Use two teams and three balls
- Server slaps ball (prompts) so setter and hitter make off-the-ball movements (open up, transition)
- Server tosses ball to passer, who uses forearm pass to get the ball to the setter
- Setter sets (forearm or overhead pass) and hitter hits or spikes (see figure 8.20)

**Note**
Server can also use any easy underhand or overhead serve

**GAME 2**
Repeat game 1
Lesson: #8

Unit: Volleyball      Tactical Level: III
Equipment: Volleyball Court (as many as possible), 1 volleyball per 3 students
Setting: Inside

Tactical Problem: Defending against an attack
Lesson Focus: Digging
Objective: Contain the dig on your court

GAME 1

Setup
3v3

Goals
- Win a point with a down ball or spike if possible
- Be aware of the need to contain the dig on your side of the court

Conditions
- Use a narrow court
- Initiate game from a no-ace serve
- Rotate on the serve (side-out)
- Use up to three hits on a side

Note
Arrange players in positions of passer, setter, and hitter as shown in figure 8.21

Questions
Q: What is your role as a player in the back row?
A: To dig the ball, keep the ball in play, and save the ball.

Q: How can you dig a spike ball and contain it on your side of the court?
A: Be low and dig to self.

Q: Why should you contain the ball on your side of the court?
A: To counteract and to set and hit.

PRACTICE TASK

Setup
Practice digging triad.

Goal
Perform 3 of 5 trials successfully and rotate
Conditions
- Use one team and three balls
- Tosser slaps the ball (prompts) so the digger adjusts to low posture
- Tosser tosses or hits a down ball (mock spike) to the digger across the court
- Digger digs ball to self (see figure 8.22)

Note
This task may not seem game like, but if players focus on digging to self, it will help them learn to contain the ball on their side of the court. If players can dig high to self, then the next progression is to dig to the center of the court.

Cues
- Low posture
- J-stroke
- Dig to the center of the court

Note
Repeat practice, going to digger on down the line

GAME 2

Setup
3v3

Conditions
- Rally score
- Regular serve

Note
Rally score is when all side-outs earn an extra point (think of it as fast-forwarding the game)
Flag Football Unit

Lesson: #1

Unit: Flag Football  
Tactical Level: II  
Equipment: Football (1 ball per 3 students), Flags, Cones  
Setting: Outside

Tactical Problem: Maintaining Possession

Lesson Focus: Passing  
Objective: Pass the ball quickly & accurately

GAME 1

Setup  
4 v 4

Goals  
- Score 1 point by successfully passing and catching the ball 4 times in a row  
- Accurately pass the ball to your teammates

Conditions  
- Stay in restricted area  
- Can pass the ball forward or backwards  
- Defenders must stay 3 feet back from passer

Questions  
Q: What was the goal of the game?  
A: Accurately pass the ball to your teammates.

Q: How did you score?  
A: By passing the ball 4 times consecutively to your teammates.

Q: How did you pass the ball accurately?  
A: Used an L shape throwing action; spiral action, used non throwing arm to point to aiming point.

Q: How did you throw a spiral?  
A: Gripped the ball like a soda can; 3-4 fingers on the laces of the ball; Turned palm out when throwing.

Q: Where did you throw the ball to the receiver?  
A: In front of the receiver; high or low and to the side depending on the defense.
PRACTICE TASK

Setup
In groups of three, throw the ball high and low and to the sides of the receiver. Passers let the receiver know where you are throwing the ball (target area).

Goals
- Pass accurately to various locations
- Catch the ball

Cues
- Throwing
  - Grip the ball with 3-4 fingers on the laces like holding a soda can
  - Make an L shape when throwing
  - Take a short medium step with opposite leg of throwing arm
  - Release the ball at 2:00
  - Follow through (turn palm out)

GAME 2
Repeat Game 1

Lesson: #2

Unit: Flag Football    Tactical Level: II
Equipment: Football (1 ball per 3 students), Flags, Cones
Setting: Outside

Tactical Problem: Maintaining possession
Lesson Focus: Signaling, receiving and controlling the ball

Objective:
- To signal for the ball
- Catch and protect the ball
- Get yards after the catch

GAME 1

Setup
4 v 4

Goals
- Catch and tuck the ball
- Score 1 point by successfully catching and tucking the ball
- Score 1 point by catching a touchdown

Conditions
- Stay in restricted area
When the catch is made the offensive player is down  
The offense goes until they drop a pass or score a touchdown

Questions
Q: What was the goal of the game?
A: To catch and tuck the ball.

Q: How did you score?
A: By catching and tucking the ball.

Q: What ways did you catch the ball and how?
A: If it was high or at the chest we use big hands in a diamond shape. If the ball was low we used big hands with pinky fingers together.

Q: Why don’t you catch the ball with your hands and chest (trapping)?
A: The ball could bounce off your chest.

Q: Why do you tuck the ball after a catch?
A: So you don’t fumble or get the ball stripped.

Q: How do you tuck the ball?
A: High and tight close to the chest.

PRACTICE TASK

Setup
In groups of 2 pass the ball with your partner. Pass the ball 10 times high and 10 times low using the appropriate way to catch the ball. With every catch tuck the ball before throwing to your partner.

Goal
- Catch and tuck the ball 10 consecutive times high and low

Cues
- Catching
  - Low Ball
    - Big hands
    - Pinky fingers together
    - Pull ball into chest
  - High Ball
    - Big hands
    - Reach out
    - Diamond shape
    - Pull ball into chest
GAME 2
Repeat Game 1

Lesson: #3

Unit: Flag Football  Tactical Level: II
Equipment: Football (1 ball per 3 students), Flags, Cones
Setting: Outside

Tactical Problem: Creating Space in a passing attack
Lesson Focus: Running routes to avoid defenders
Objective:
- Recognize the type of defense
- Running different routes for different types of defense

GAME 1

Setup
4 v 4

Goals
- Be creative in getting open to receive a pass
- Score 1 point for each touch down

Conditions
- Stay in restricted area
- You have 6 downs to score a touchdown
- You are down where you catch the ball

Questions
Q: What was the goal of the game?
A: To get open to catch a pass.

Q: What did you do to get open?
A: Faked running hard and stopped for a pass, made jukes, and made various cuts.

Q: If the defense was playing up tight on you what type of routes did you run?
A: Deep routes, Seams.

Q: What types of routes did you run when the defense gave you a cushion?
A: Short quick routes.
PRACTICE TASK 1

Setup
In groups of 6 assign someone to be a passer to throw the following routes to the receivers: a 6 yard slant, a 6 yard hitch, a 12 yard comeback, a seam, and a post corner.

Goals
- To catch the ball
- To run appropriate routes

PRACTICE TASK 2

Setup
In groups of 6 assign someone to be a passer, a receiver, and a defender. The receiver tells the passer what route you are going to run.

Goals
- To catch the ball
- To get away from the defender

GAME 2
Repeat Game 1

Lesson: #4

Unit: Flag Football  
Tactical Level: II
Equipment: Football (1 ball per 3 students), Flags, Cones
Setting: Outside

Tactical Problem: Attacking the goal (end zone)
Lesson Focus: Scoring in short yardage situations (10 yard line)
Objective:
- Create ways to score from a short distance

GAME 1

Setup
6 v 6

Goals
- Score 1 point for a touchdown
- Score with only 2 plays or less

Conditions
- Start the ball on the 10 yard line
- Stay in restricted area
- 2 downs to score a touchdown

Questions

Q:  What was the goal of the game?
A:  To score a touchdown in less than 2 plays on the 10 yard line.

Q:  What did you do to score in short yardage situations?
A:  Play action plays; faking to the running back, throwing to the running back out of the backfield, and having the receivers use crossing patterns.

PRACTICE TASK

Setup

In your teams design 3 offensive plays that can be used in short yardage situations. Practice these 3 plays to use in the next game.

Goals

- Design plays that can be used in short yardage situations
- Practice the plays
- Be creative

GAME 2

Repeat Game 1

Lesson: #5

Unit: Flag Football  Tactical Level: II
Equipment: Football (1 ball per 3 students), Flags, Cones
Setting: Outside

Tactical Problem: Maintaining Possession of the ball
Lesson Focus: Running with the ball

Objective:
- Juke, spinning and making cuts to avoid the defense
- Pass the ball laterally
- Secure and protect the ball
- Proper technique running with the ball

GAME 1

Setup
6 v 6

Goals
- Pass the ball laterally
- Secure the ball
Avoid the defenders
Secure the ball
Score 1 point for making 4 lateral passes without someone pulling your flag
Score 1 point for a touchdown

Conditions
- Stay in restricted area
- No forward passing only lateral passing
- Once your flag is pulled you’re down
- Keep laterally passing the ball until the ball carriers flag is pulled

Questions
Q: What was the goal of the game?
A: To pass the ball laterally.

Q: Why would you pass the ball laterally?
A: To keep the play going.

Q: How do you pass the ball laterally?
A: With 2 hands, underhand throw with arms straight.

Q: When running with the ball how did you prevent the defense from pulling your flag?
A: By juking, diving, spinning or laterally passing to a teammate.

Q: How do you protect the ball when you are running?
A: High and tight to the chest.

PRACTICE TASK

Setup
In groups of 6 in a diagonal line (5 yards apart) run down the field passing the ball laterally. Once everyone has passed the ball laterally turn around and repeat. Do this 10 times.

Goals
- Pass the ball accurately using the lateral pass.
- Catch, tuck and protect the ball.

Cues
- Lateral Pass
  - Hold ball with two hands
  - Underhand throw
  - Arms straight
  - Aim for chest
  - Pass goes behind
GAME 2
Repeat Game 1

Lesson: #6

Unit: Flag Football  Tactical Level: II
Equipment: Football (1 ball per 3 students), Flags, Cones
Setting: Outside

Tactical Problem: Defending space
Lesson Focus: Marking an opponent and pressuring the opponent with the ball
Objective:
- Be ready to intercept the pass
- Breakdown and take away the flag without receiver getting extra yards

GAME 1

Setup
4 v 4

Goals
- Defense scores 1 point for not allowing the receiver get extra yards after the catch
- Keep the offensive player in front of you
- Not allowing the offense to catch the ball

Conditions
- Stay in restricted area
- No rushing the passer
- Only passing plays no running plays

Questions
Q: What was the goal of the game?
A: To prevent the receivers from catching the ball.

Q: How was this done?
A: By choosing one offensive player and staying close to them.

Q: If the offensive player caught a ball how did you prevent him/her of getting more yards?
A: By breaking down (lowering the hips and not falling for the fakes).

Q: How could you anticipate if the offensive player you were guarding was getting the ball?
A: By watching the passer’s eyes.
PRACTICE TASK

Setup
In groups of 3 have one member of the group be the passer, one the defender and the other receiver. Practice guarding the receiver and intercepting the ball.

Goals
- To stop the receiver from catching the ball
- To intercept the ball

Cues
- Stance
  - Stay low
  - Back pedal
  - Move arms
  - Turn and run with the receiver if you feel he is getting too close

GAME 2
Repeat game 1

Lesson: #7

Unit: Flag Football    Tactical Level: II
Equipment: Football (1 ball per 3 students), Flags, Cones
Setting: Outside

Tactical Problem: Restarting play
Lesson Focus: Punting and catching a punt

Objective:
- Use directional kicking
- Kick the ball far and high
- Catch a punt

GAME 1

Setup
5 v 5

Goals
- Stay in the restricted area
- Score 1 point for a punt more than 20 yards
- Score 1 point for a successful catch off of a punt
- Score 1 point for a touchdown
Conditions
- 4 plays to score a touchdown
- Punt after 4 unsuccessful plays
- No rushing passer
- Everyone on the team punts at least once

Questions
Q: What was the goal of the game?
A: To punt the ball high and far, and catch a punt.

Q: How did you punt the ball successfully?
A: Hold ball away from body, drop the ball flat, swing leg under body, make contact with the shoelaces, and keep toes pointed.

Q: Did you kick the ball to a certain direction? And why?
A: Yes, away from the punter so they cannot field the punt.

Q: How did you catch the punt?
A: Like a cage with our arms, fingers pointing to the sky, palms towards the face, and elbows to the stomach

PRACTICE TASK

Setup
In groups of 2 punt the ball 15 times to your partner. Follow the proper punting cues and catching cues.

Goals
- To kick the ball accurately to your partner
- To catch the punted ball

Cues
- Punt
  - Hold ball away from body
  - Drop the ball flat
  - Swing leg under body
  - Make contact with the shoelaces
  - Keep toes pointed

- Catch
  - Form a cage with your arms
  - Fingers pointing to the sky
  - Palms towards the face
  - Elbows to the stomach
GAME 2
Repeat Game 1

Lesson: #8

Unit: Flag Football  
Tactical Level: II
Equipment: Football (1 ball per 3 students), Flags, Cones
Setting: Outside

Tactical Problem: Defending Space
Lesson Focus: Using a Zone Defense

Objective:
- To protect the assigned area
- To communicate with teammates

GAME 1

Setup
5 v 5

Goals
- To protect your assigned area
- To prevent the offense from catching the ball
- Score 1 point by successfully intercepting the ball or batting the ball down
- Score 1 point for a touchdown

Conditions
- Stay in restricted area
- Passing only for the offense
- 4 downs to score

Questions
Q: What was the goal of this game?
A: To protect your zone.

Q: What is the difference between man and zone defense?
A: Zone defense is when you guard a specific area on the field. Man defense is when you guard a specific man.

Q: What is essential in zone defense?
A: Communication with teammates.

Q: When might you want to play zone?
A: When the offense has to go a long way for a first down.
PRACTICE TASK

Setup
In groups of 8 have 3 offensive players and 5 defenders. Assign certain areas on the field for the defenders to guard. Offensive players run several plays. Take turns on defense.

Goals
- Stop the offense from catching the ball in your area.
- Communicate with your teammates.

GAME 2
Repeat Game 1

Ultimate Frisbee Unit

Lesson: #1

Unit: Ultimate Frisbee  Tactical Level: II
Equipment: Cones (to mark the field), Frisbees, & Jerseys
Setting: Outside

Tactical Problem: Maintaining Possession of the Frisbee
Lesson Focus: Passing and Controlling the Frisbee
Objective: Protect the Frisbee, Pass Quickly and Accurately

GAME 1

Setup
4 x 4

Goals
- Keep the Frisbee in the air and out of the hands of the defense
- Score by successfully passing the Frisbee between your teammates
- Each teammate must catch the Frisbee at least once per point
- The thrower can pivot on one foot
- The receiver can take no more than three steps after catching the Frisbee

Conditions
- Stay in the restricted area
- Defenders must be an arm’s length away from the thrower
- Three consecutive passes and catches equal 1 point

Questions
Q: What was the goal of your game?
A: Keep the Frisbee away from the defense and make consecutive passes between teammates.

Q: How did you score?
A: By successfully passing the ball between each of us.

Q: What did you have to do in order to be successful?
A: Catch the Frisbee and get open and away from the defender to receive the Frisbee.

Q: How did you catch the Frisbee?
A: 1 hand, 2 hand (Sandwich catch).

Q: How did you get open?
A: Juking, faking, sharp cutting.

**PRACTICE TASK**

**Setup**
In your teams of three throw the Frisbee to the left and right of your teammate (look for signal)

**Goals**
- Use both the backhand and forehand
- Pass accurately to the side the teammate is signaling for the Frisbee.

**Cues**
- Throwing
  - Backhand
    - Stand sideways
    - Pinch disk’s edge with thumb and forefinger
    - Step at target
    - Release like a whip
  - Forehand
    - Middle finger is the pivot point placed on in the inside of the lip of the disk
    - Thumb on top
    - Elbow close to the hip
    - Snap wrist

**GAME 2**
Repeat Game 1
Lesson: #2

Unit: Ultimate Frisbee    Tactical Level: II
Equipment: Cones (to mark the field), Frisbees, & Jerseys
Setting: Outside

Tactical Problem: Maintaining Possession of the Frisbee
Lesson Focus: Catching and getting open
Objective: Making appropriate catches and moves to get open to receive the Frisbee

GAME 1

Setup
4 v 4

Goals
- Keep the Frisbee in the air and out of the hands of the defense
- Score by successfully passing the Frisbee between your teammates.
- Each teammate must catch the Frisbee at least once per point.
- The thrower can pivot on one foot
- The receiver can take no more than three steps after catching the Frisbee

Conditions
- Stay in the restricted area
- Defenders must be an arm’s length away from the thrower
- Everyone on the team must catch the Frisbee at least once before scoring
- To score 1 point the offense must catch a Frisbee over the goal line

Questions
Q: What were the different ways you caught the Frisbee?
A: 1 hand/2 handed.

Q: Of the 1 hand and 2 handed catch which is more appropriate to be successful in catching?
A: 2 handed.

Q: How did you get open in to catch the Frisbee?
A: Juked, L cuts, V cuts, picks, and Ran faster than the defender etc.

PRACTICE TASK 1

Setup
Groups of 3 with one Frisbee

Goals
- Use the 2 handed sandwich method to catch the Frisbee
Use the backhand throw
Catch 5 in a row. If you succeed at 5 in a row see how many you can get in a row.

Cues
- Eyes on Disk
- Big hands (1 on top, 1 on bottom)
- Clap down

PRACTICE TASK 2

Setup
Same groups of 3 with one Frisbee
1 person is the defender, 1 person in the offensive player (receiver), and 1 person is the thrower (Rotate)

Goals
- The offensive player needs to work on juiking and cutting to get away from the defender to receive a pass
- Get open and catch the Frisbee 3 consecutive times

GAME 2
Repeat Game 1

Lesson: #3

Unit: Ultimate Frisbee  Tactical Level: II
Equipment: Cones (to mark the field), Frisbees, & Jerseys
Setting: Outside

Tactical Problem: Preventing Scoring
Lesson Focus: To understand and develop the concept of marking, guarding and cutting to decrease offensive’s space
Objective: Learn defensive strategy and guarding a man

GAME 1

Setup
4 v 4

Goals
- Keep the Frisbee in the air and out of the hands of the defense
- Score by successfully passing the Frisbee between your teammates
- Each teammate must catch the Frisbee at least once per point
- The thrower can pivot on one foot
- The receiver can take no more than three steps after catching the Frisbee
Conditions
- Stay in the restricted area
- Defenders must be an arm’s length away from the thrower
- Everyone on the team must catch the Frisbee at least once before scoring
- To score 1 point the offense must catch a Frisbee past the goal line

Questions
Q: How did you prevent the offense from scoring?
A: By assigning the defensive players to a man to guard or playing in a zone or area of the field.

Q: When playing man defense what should you do as a defender?
A: Stay next to your man (glued).

Q: What is an important concept when playing a zone defense?
A: Communication with teammates.

GAME 2
Repeat the same game as above
Allow teams a few minutes prior to the game to discuss their defensive strategy
REFERENCES


